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ABSTRACT

The study focuses on the issue of entry into building trades unions, detailing union procedures and standards, journeyman's background, and comparing training routes. Various basic construction trades were investigated: bricklayers, carpenters, electrical workers, ironworkers, plumbers and steamfitters, and sheet metal workers. Data were collected through interviews and surveys. About 49% of the journeymen interviewed (from a total of 1,234) had served apprenticeships and were younger, better educated, more likely to have friends and relatives in the trade, and learned the trade faster than those trained informally. Craftsmen obtain work in the jurisdiction of most building trades local unions in four ways: graduation from an apprenticeship program, admission to the union as a journeyman or by being upgraded into the union's construction branch, transfer from other locals, and working under temporary permits. A large majority of informally trained journeymen learned their trade either by working as laborers or helpers or by working on the job in open shops. The study provides strong evidence that apprenticeship training gives construction craftsmen considerable advantage over the informally trained. Sixty-six tables illustrate minority representation union entry requirements (by trade) and other comparative data. A bibliography, list of persons interviewed, and survey instruments are appended. (Author/EC)

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Training and Entry Into Union Construction

Manpower R&D Monograph 39

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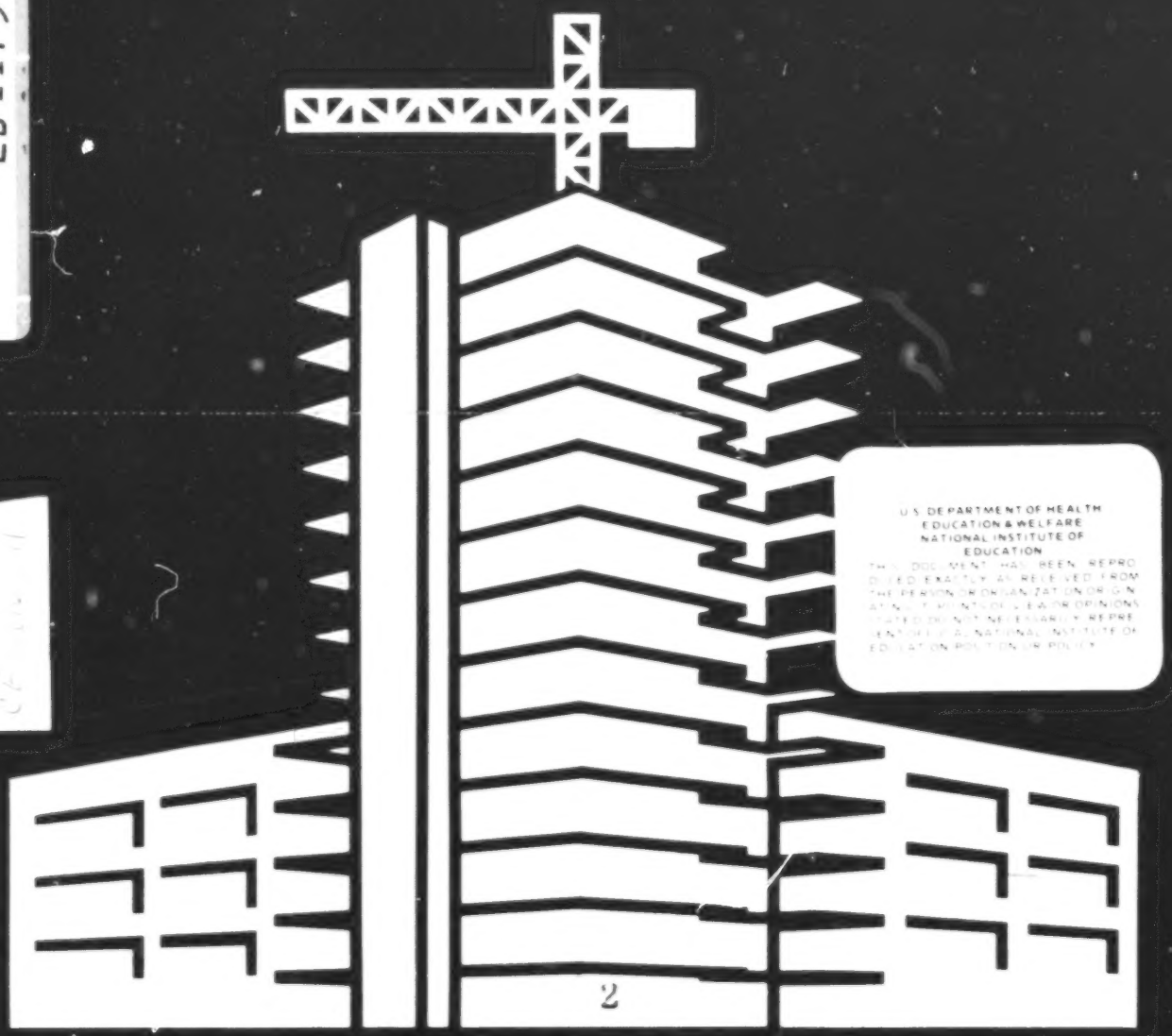

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Training and Entry Into Union Construction

Manpower R&D Monograph 39

U. S. Department of Labor
John T. Dunlop, Secretary

Manpower Administration
William H. Kolberg
Assistant Secretary for Manpower
1975

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Chapter I

INTRODUCTION, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Few sectors of the American labor movement are discussed more and understood less than the building trades. Among the issues which have been least understood is the matter of entry into building trades unions. Basically, one can become a journeyman[1] craftsman in one of two ways -- either by graduating from an apprenticeship training program or by entering the union through direct admission to journeyman status. Apprenticeship is the entry route preferred by most union officials. However, recent studies have shown that although the percentage of union members who were trained in apprenticeship varies by craft and by geographic area, on the whole, more building tradesmen have been trained informally -- in open shops, as helpers or laborers, in military or other training programs -- than have learned their trades through formal apprenticeship programs.[2]

Objectives of the Study

This study focuses on the issue of entry into building trades unions. Chapter II provides background information on the construction industry, building trades unions, and apprenticeship. Procedures and standards which building trades unions use to admit craftsmen to journeyman status are detailed in Chapter III. Chapter IV contrasts men who enter the unions without attending apprenticeship with those who are apprenticeship graduates. Chapter V documents how the apprenticeship-trained men fare in the labor market in comparison with other journeymen.

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[1] In this paper "journeyman" designates a person who obtains the full union wage rate. It will be used interchangeably with the terms "craftsman" and "mechanic," which are terms commonly used in the industry.

[2] For example, see Howard G. Foster, "Nonapprenticeship Sources of Training in Construction," Monthly Labor Review, Vol. 93, No. 2 (February 1970), pp. 21-26; Irwin Dubinsky, "Trade Union Discrimination in the Pittsburgh Construction Industry," Urban Affairs Quarterly, Vol. 6, No. 3 (March 1971), pp. 297-318; and Herbert Hammerman, "Minority Workers in Construction Referral Unions," Monthly Labor Review, Vol. 95, No. 5 (May 1972), pp. 17-26.

More specifically, this study addresses the following questions concerning entry into building trades unions: who is allowed to join construction unions, and what procedures must be followed in order to join? What standards must be met by prospective journeymen? By prospective apprentices? What are the procedures involved in allowing nonmembers to work in a union's jurisdiction? Do these standards and procedures facilitate or frustrate the workings of the market?

What are the backgrounds of mechanics who enter the trades in various ways? Do the better craftsmen enter the union through some routes more than others, and if so, why? Do apprenticeship-trained craftsmen tend to work more steadily than journeymen who learn the trade in other ways? Do apprenticeship graduates tend to advance to supervisory status faster and more often than other journeymen? What policy implications may be drawn from an analysis of the above questions?

The Issue of Minority Participation in Construction

Naturally, any study of entry into building trades unions has important implications for minority admission into the unionized construction sector. For years, construction unions have drawn fire from minority communities and the Federal Government because some of them had few or no blacks. During the 1960's, several efforts of the Federal Government focused on increasing minority admissions into building trades unions. These efforts included Executive Order 11246,[3] 29 CFR 30,[4] support of apprenticeship information centers and apprenticeship

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[3]Executive Order 11246, 3 CFR, pp. 339-348 (Comp. 1964-1965). This order, issued in 1965, requires contractors on federally aided projects to have "affirmative action" programs to hire minority group members. The order authorized the creation of the Office of Federal Contract Compliance (OFCC) in the U.S. Department of Labor to oversee the equal employment provisions of Federal contracts.

[4]Title 29, Part 30, of the Code of Federal Regulations requires that directors of apprenticeship programs registered with the Bureau of Apprenticeship and Training which have too few minorities submit affirmative action plans detailing the procedures to be used in recruiting and selecting minorities.

outreach programs,[5] several court decisions,[6] support of union-oriented nonapprenticeship training programs for the disadvantaged, support of Model Cities program efforts to train the disadvantaged in construction, and various imposed and negotiated city and area plans[7] for employing minorities in construction.[8] Chapter VI addresses the policy implications

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[5]For a description and evaluation of the apprenticeship outreach concept, see Ray Marshall and Vernon Briggs, Equal Apprenticeship Opportunities: The Nature of the Issue and the New York Experience (Ann Arbor: National Manpower Policy Task Force and Institute of Labor and Industrial Relations, University of Michigan-Wayne State University, 1968).

For a description of U.S. Department of Labor support of apprenticeship information and apprenticeship outreach programs, see "Reaching Out for Apprentices," Manpower, Vol. 1, No. 5 (June 1969), pp. 8-13.

[6]For an article on court actions, see William B. Gould, "Racial Discrimination, Courts, and Construction," Industrial Relations, Vol. 11, No. 3 (October 1972), pp. 380-393. Also, for an analysis of one case, see George D. Zuckerman, "The Sheet Metal Workers' Case: A Case History of Discrimination in the Building Trades," Labor Law Journal, Vol. 20, No. 7 (July 1969), pp. 416-427.

[7]As of December 31, 1972, "hometown" or voluntary plans had been negotiated and approved by OFCC in 52 local areas. Plans had been imposed on the construction industry in six cities: Atlanta, Philadelphia, St. Louis, San Francisco, Washington, D C., and (by court decision) Seattle.

Much has been written on the comparative effectiveness of the two types of plans; for example, see Richard L. Rowan and Robert J. Brudno, "Fair Employment in Building: Imposed and Hometown Plans," Industrial Relations, Vol. 11, No. 3 (October 1972), pp. 394-406. Also, see "The Philadelphia Plan vs. the Chicago Plan: Alternative Approaches for Integrating the Construction Industry, Comment," Northwestern University Law Review, Vol. 65, No. 4 (September-October 1970), pp. 642-670.

[8]For a more extended discussion of these efforts, see Ray Marshall, "The Impact of Civil Rights Laws on Collective Bargaining in the Construction Industry," Poverty and Human Resources, Vol. 5, No. 1 (January-February 1970), pp. 5-17.

of this study for the upgrading of minority workers in construction employment with respect to these Federal efforts.

Nationally, minorities have made significant gains in construction apprenticeships since 1960, when only 2.2 percent of apprentices were minorities.[9] Minorities comprised 7.2 percent of construction apprentices at the end of 1968 and 15.1 percent at the end of 1972.[10] However, the racial composition of construction union membership has changed more slowly.[11] Further, minority concentration varies significantly by trade. As shown in tables 1 and 2, in our study cities, minorities were least represented in the "mechanical trades."[12]

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[9] Marshall and Briggs, The Negro and Apprenticeship, p. 28.

[10] U.S. Department of Labor, Office of Information, News Release No. 73-206 (May 27, 1973). The data pertain only to apprenticeship programs serviced by the U.S. Bureau of Apprenticeship and Training.

[11] Herbert Hammerman, "Minorities in Construction Referral Unions -- Revisited," Monthly Labor Review, Vol. 96, No. 5 (May 1973), pp. 43-46.

[12] Underrepresentation of minorities in the mechanical trades is a pattern found in many cities across the country. See Vernon M. Briggs, Jr., "Black Entry into the Apprentice Trades: Lessons of the Sixties and Prospects for the Seventies," paper presented at the Indiana University Manpower Conference (March 20, 1970), mimeograph.

The same pattern is further documented by national Equal Employment Opportunity Commission data. As an EEOC press release dated February 9, 1971, regarding 1966 data on minority union membership, states:

> Close analysis of the statistics reveals that minority membership is concentrated in those unions at the lower end of the wage scale. Conversely, minority membership in most highly skilled and best paying categories is much lower. Approximately 1,000 building trades locals were classified in the higher skilled category known as mechanical trades, which included the Boilermakers, Electrical Workers (IBEW), Elevator Constructors, Iron Workers, Plumbers and Pipefitters, and Sheet Metal Workers. The mechanical trades showed a minority membership of 6.2 percent, as follows: Negro: 1.6 percent;

TABLE 1. MINORITY GROUP REPRESENTATION IN BUILDING TRADES UNIONS, BY CITY, 1970

City[1]	Membership in reporting building trades unions[2]	Minority group membership					Minorities as percentage of total reported membership
		Black	Spanish Surnamed American	Oriental	American Indian	Total minority	
Atlanta	8,770	565	37	11	23	636	7.3
Austin	2,138	49	151	0	5	205	9.6
Chicago	53,083	3,187	1,146	20	106	4,459	8.4
Columbus	7,832	1,357	1,564	0	21	2,942	37.6
Houston	8,981	2,547	983	3	26	3,559	39.6
Jackson	4,301	928	50	0	12	990	23.0
New York	79,859	9,083	6,454	70	202	15,809	19.8
San Francisco-Oakland	59,259	7,097	6,291	581	476	14,445	24.4
Total	224,223	24,813	16,676	685	871	43,045	19.2

[1] Data are for SMSA's, except for New York (data for city only).

[2] Includes only members of unions who reported to EEOC; thus these data are understated for all cities.

SOURCE: EEOC data.

TABLE 2. MINORITY REPRESENTATION IN MECHANICAL TRADES, BY CITY, 1970

City[1]	Membership in reporting mechanical trades unions[2]	Minority group membership					Minorities as percentage of total reported membership
		Black	Spanish-Surnamed American	Oriental	American Indian	Total minority	
Atlanta	3,407	19	6	0	12	37	1.1
Chicago	29,891	945	374	14	57	1,390	4.7
Columbus	3,370	30	20	0	13	63	1.9
Houston	4,680	148	227	3	7	385	8.2
New York	28,943	2,881	3,044	6	188	6,119	21.5
San Francisco-Oakland	16,869	700	1,022	152	139	2,013	11.9
Total	87,160	4,723	4,693	175	416	10,007	11.5

[1] Data are for SMSA's, except for New York (data for city only). No data are included for Austin or Jackson because separate data were not available for the mechanical trades.

[2] Includes only members of locals who reported to EEOC. "Mechanical trades" include boilermakers, electrical workers, elevator constructors, ironworkers, plumbers and pipefitters, and sheet metal workers.

SOURCE: EEOC data.

The Trades And Cities Studied

We investigated a cross section of trades in a variety of cities. Six trades were studied: bricklayers (Bricklayers, Masons, and Plasterers' International Union); carpenters (United Brotherhood of Carpenters and Joiners of America); electrical workers (International Brotherhood of Electrical Workers); ironworkers (International Association of Bridge, Structural, and Ornamental Ironworkers); plumbers and steamfitters (United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada); and sheet metal workers (Sheet Metal Workers' International Association). Although these six crafts comprise only a third of the building trades unions, all are basic construction trades. Further, while apprenticeship traditionally has been an important source of "mechanical" trades (electrical work, plumbing and pipefitting,[13] and sheet metal work) journeymen, it has been less important in carpentry, bricklaying, and ironwork.[14]

Spanish-surnamed American: 3.2 percent; Oriental: 0.7 percent; American Indian: 0.7 percent.

However, minority membership was greater in the generally lower paying general construction trades composed of Asbestos Workers, Bricklayers, Carpenters, Lathers, Marble Polishers, Operating Engineers, and Plasterers and Cement Masons. In these trades, minority membership was 8.6 percent, broken down as follows: Negro: 3.6 percent; Spanish-surnamed American: 4.0 percent; Oriental: 0.3 percent; American Indian: 0.7 percent.

Finally, in the lowest paying general construction trades group composed of the Laborers, Painters and Decorators, and Roofers, minority membership was 31.8 percent, broken down as follows: Negro: 20.1 percent; Spanish-surnamed American: 10.0 percent; Oriental: 0.5 percent; American Indian: 1.2 percent.

[13] In this study, "pipefitting" and "steamfitting" are used interchangeably.

[14] For a further discussion of the varying role of apprenticeship by craft, see D. Quinn Mills, Industrial Relations and Manpower in Construction (Cambridge, Mass.: M.I.T. Press, 1972), pp. 181-186 and 222-223.

Our nine study cities were: Atlanta; Austin, Tex.; Columbus, Ohio; Chicago; Houston; Jackson, Miss.; New York; Oakland; and San Francisco. The study was first made on a pilot basis in Atlanta, Austin, and New York to determine its feasibility. On the basis of the pilot experience, research procedures were refined, and the study was extended to Chicago, Columbus, Houston, Jackson, Oakland, and San Francisco.

The cities chosen offer diversity in geography as well as in size, degree of unionization, and labor market conditions. Likewise, individual building trades unions differ in structure, jurisdiction, and referral procedures. Such diversity facilitates comparisons and contrasts while reducing the danger of drawing conclusions based on unique or abnormal situations.

The size of construction employment relative to total nonagricultural employment varies considerably among the cities (see table 3). Houston has the largest relative employment in construction, followed in order by: Austin, Jackson, Atlanta, Columbus, San Francisco-Oakland, and New York.

Methodology

Material for this study was gathered from several sources, including: (1) interviews with union officials and management representatives; (2) interviews with rank-and-file journeymen; (3) sampling of data from pension trust fund records; (4) telephone, mail, and personal surveys of contractors concerning their supervisory personnel; and (5) an extensive review of published and unpublished materials on the construction industry.

Since different methods were used for each of our major sections, the methodology of each section will be explained in the appropriate chapters. The remainder of this chapter summarizes the study and presents our main conclusion and recommendations. Chapter II contains background information

TABLE 3. CONSTRUCTION EMPLOYMENT, BY CITY, 1971

City	(1) Total non-agricultural employment (thousands)[1]	(2) Employment in contract construction (thousands)[1]	(3) Construction as percentage of nonagricultural employment $\left[\frac{(2)}{(1)}\right]$
Atlanta	623.6	34.7	5.6
Austin	122.5	8.7	7.1
Chicago	2,930.6	117.8	4.0
Columbus	382.2	18.0	4.7
Houston	787.8	70.3	8.9
Jackson	96.0	5.9	6.1
New York City	3,613.4	112.8	3.1
San Francisco-Oakland	1,231.7	56.3	4.7

[1] Figures are for SMSA's, except for New York data; these refer only to the city.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings: States and Areas, 1939-1971.*

on the construction industry and the unions representing much of its work force. Traditional routes of entry into building trades unions are described and evaluated in Chapter III. The educational, training, and personal backgrounds of construction journeymen are described in Chapter IV. Chapter V compares the performance of apprenticeship-trained craftsmen with that of mechanics who learned their trades on the job or in other less formal ways.

Summary

Characteristics of Apprenticeship Graduates and Other Craftsmen Interviewed

Our interviews with 1,234 journeymen afford considerable insight into the characteristics of journeymen who have been trained in various ways. About half of our interviewees (538, or 49 percent) had served apprenticeships. As compared with those trained informally, the apprenticeship-trained journeymen:

(1) Were younger. Average age, 37.7 years, as compared with 46.4 years for others.

(2) Were better educated. Average education was 12 years, as compared with 11 years for others. Moreover, 78 percent of apprenticeship-trained journeymen had completed high school as compared with only 58 percent of others.

(3) Were more likely to have friends and relatives in the trade. About a third (32 percent) of the apprenticeship-trained journeymen had fathers in the trade, and 63 percent had friends and relatives; the comparable figures for those trained by informal means were 24 percent and 54 percent.

(4) Learned the trade faster. Only in the ironworkers' union did informally trained craftsmen become journeymen more quickly, on the average, than the duration of apprenticeship. It should be observed, however, that significant numbers of informally trained journeymen learned the trade in shorter average times than the duration of apprenticeship in their trade: 75 percent of ironworkers, 44 percent of bricklayers and carpenters, 39 percent of pipe trades journeymen, and 21 percent of electricians.

Union Entry Requirements

Craftsmen obtain work in the jurisdiction of most building trades local unions in four main ways: (1) by graduation from an apprenticeship program; (2) by direct admission to the union as a journeyman or by being upgraded into the union's construction branch from a lower skilled branch; (3) by transferring from other locals within the same international; and (4) by working under temporary permits provided to nonmembers. Although all of these means were examined in this study, special attention was paid to the first two.

Interviews with union officials and members in the cities studied revealed that policies concerning admissions and permits vary widely from city to city and among the locals within each city. However, certain patterns are discernible. In general, policies of locals within a given international union resembled each other much more than the policies of locals from different internationals within a given city.

Second, admission requirements in general were most stringent for plumbing, followed in order by electrical work, sheet metal work, ironwork, carpentry, and bricklaying. Third, there was greater similarity found among apprenticeship standards than among journeyman admission policies. Fourth, admission policies -- particularly those regarding permits and transfers and those regarding direct journeyman admission -- seemed to vary with the tightness of the labor market and the presence of nonunion competition.

Finally, admission requirements for apprentices also tended to be stricter than those for journeymen admitted directly. This was true mainly because the union takes greater risks with apprentices than with journeymen. It is easier to determine whether or not a journeyman is qualified than it is to determine whether or not an apprentice will successfully complete an apprenticeship program. Moreover, apprentices were expected to become well rounded craftsmen, whereas journeymen could be examined over a special aspect of the craft.

Methods of learning the trade and entering construction varied between crafts, with business conditions, and between locals in the same craft. The bricklayers' locals had more uniformity in direct journeyman entry requirements from place to place, although there was some variation in the initiation fees charged. The bricklayers were unlike the other crafts in our study in having no formal tests for entry other than a fairly uniform requirement of two vouchers certifying that the applicant could perform the particular work. The bricklayers also differed from other crafts in not having a broad journeyman classification covering all aspects of the trade; bricklayers ordinarily were admitted to one branch of the trade

(brick, stone, tile, etc.) and usually to mixed locals, although in New York there were separate locals for different specialties. The New York experience illustrates the influence of market size: generally, the larger the labor market, the greater the degree of specialization.

With respect to apprenticeship, bricklayers' entry requirements were fairly uniform from place to place. The greatest variation was in maximum age for admission, which varied from 21 (three locals) to 28 (one local), with the greatest concentration at 25 (four locals). Apprenticeship initiation fees varied from zero to $160. Bricklayers' apprenticeship programs gave less weight than the other unions studied to related or academic instruction and more to manual training. Bricklayers' apprenticeship programs also generally were shorter than those of other trades, 3 to 4 years, while others required 4 or more and most pipe trades required 5.

The bricklayers also were more lenient than other crafts in accepting transfers and issuing work permits to travelers and those who could not qualify as journeymen.

The carpenters had mixed locals for all construction specialties in smaller places and district councils of local unions in the larger places, i.e., New York, Houston, Chicago, and the San Francisco-Oakland Bay Area. Unlike the bricklayers, the carpenters ordinarily had only one journeyman classification regardless of specialty, an arrangement which complicated the business agents' work because they had to remember which specialty a worker could perform. In admitting journeymen directly, the carpenters ordinarily tested the applicant only over his specialty (although 6 of the 10 carpenters' locals did not give formal tests), conducted interviews, and charged initiation fees ranging up to $250. A few locals required one or two vouchers concerning the applicant's experience.

The carpenters provide an example of extraordinary variation from the other crafts and within the international union. Carpenters' apprenticeship programs differed from the bricklayers' in ordinarily not requiring applicants to be high school graduates. The maximum age of apprentices ranged to 27-28. The carpenters, and most other locals, waive the upper apprenticeship age limit for veterans. (It should be pointed out that age limitations for apprenticeship programs currently are under attack as discriminatory and unrelated to job requirements.) Most carpenters' apprenticeship programs require aptitude tests, prepared either by the employment service or the international union. The duration of carpenters' apprenticeship is ordinarily 4 years, with advance placement to apprentices with experience in the trade.

Although there was not much variation in age and duration requirements between carpenters' locals, there was considerable variation in education requirements and the types of tests given. In three places (Atlanta, Columbus, and the San Francisco-Oakland Bay Area), a high school education was required; in one (Chicago), completion of the 11th grade was necessary; in two (Houston and New York), completion of the 10th grade was required; and in two (Jackson and Austin), only 8 years of education were required. In Atlanta and Jackson, an aptitude test given by the employment service was required; in New York, the carpenters used a special aptitude test administered by New York University; in Houston, a test was given on 10th-grade math; and in Columbus and the Bay Area, an aptitude test devised by the international union was required.

The carpenters permitted transfers between locals freely, but ordinarily required the payment of a fee amounting to the difference between the initiation fee charged in the home local and the local in whose jurisdiction the applicant was seeking to work.

The electrical workers gave heavy and increasingly emphasis to apprenticeship as a source of journeymen. In our sample, 54 percent of all journeymen had served apprenticeships and about two-thirds of all journeymen entering after 1950 (as compared with only about one-third of those who entered before 1950) had served apprenticeships. The main method in which journeymen were admitted directly was organization of nonunion shops, in which case journeymen ordinarily were required to have about 4 years of experience, take a written test covering the trade (which seems to have been fairly uniform from place to place), and pay fees which varied from $100 to $350. All of the IBEW locals studied, except in Chicago, used a "book" system giving priority to electricians with broader training and experience.

IBEW apprenticeship requirements were fairly uniform from place to place, except for maximum age limitations, which varied from 21 to 26 years. All of the programs were of 4 years duration except for the residential program in Houston, which was 2 years. All of the electrical workers' apprenticeship applicants were required to have the equivalent of a high school education, to take aptitude tests, and often to take a test on mathematics.

The ironworkers generally made very limited use of apprenticeship before 1950. In our sample, for example, only 4 percent of the journeymen admitted before 1950 had served an apprenticeship. The percentages of total journeymen admitted in subsequent years serving an apprenticeship increased markedly, but the proportion serving an apprenticeship was still only 22 percent of the total

sample, the lowest of any craft. The ironworkers have a general category, journeyman ironworker, for craftsmen trained in all phases of their craft and specialty designations for others; however, a journeyman is not restricted to work within his specialty. Journeymen admitted directly to union membership were tested over their specialty and paid initiation fees of $300, except in Chicago, which did not have direct admissic between 1967 and 1972.

Ironworkers' apprenticeship programs are fairly unifcrm except fcr testing; most locals required apprentices to take aptitude tests, but three locals required no tests of apprenti High school education was required in each case except New Yor which required apprentices to have completed only the 10th grade. Maximum ages were more uniform than those in other uni all fixed the upper limit at 30 years, except Oakland where it was 31.

The pipe trades, mainly plumbers and pipefitters, ordinar also were in mixed locals, except for New York, Chicago, and Houston, where pipefitters were organized into separate locals The pipe trades rely heavily on apprenticeship. Sixty-one percent of our pipe trades journeyman interviewees had served apprenticeships.

The pipe trades have more stringent requirements for dire admission than most of the other programs studied. Informally trained journeymen who wanted to join most pipe trades locals had to have 5 years of experience in the trade, take a written test, have vouchers from another member or contractor, sometim be accepted by membership votes, and pay initiation fees which varied from $200 in the Houston plumbers' local (more accurate $50 for residential branch and $200 for the commercial and industrial branch) to $1,000 in Jackson.

All of the pipe trades apprenticeship programs were for 5 years, required applicants to be high school graduates (except Columbus where pressure from civil rights groups had caused the education level to be reduced to 10th grade), to pass aptitude tests, and be under 27 years of age, except San Francisco where the maximum age was 30.

The sheet metal workers have greatly increased the use of apprenticeship as a source of journeymen. Only 20 percent of journeymen in our sample who entered the union before 1950 had served apprenticeships, as compared with 77 percent of those who entered between 1961 and 1972.

In keeping with this emphasis on apprenticeship, the shee metal workers made it difficult for journeymen to enter direct Initiation fees were uniformly 100 hours of journeyman pay, which was the highest average of any international studied. In addition, informally trained journeymen were required to ha

4 years of experience and to pass written and practical tests. In New York, journeymen were admitted only through the apprenticeship route.

Sheet metal apprentices had to be high school graduates and pass aptitude tests. The duration of apprenticeship ordinarily was 4 years, but some locals required between 4 and 5 years.

Sources of Training for Nonapprentices

Regarding the sources of training by craft for journeymen who did not serve apprenticeships, there is fairly uniform evidence that a large majority of informally trained journeymen learned their trade either by working as laborers or helpers or by working on the job in open shops. More than half of all craftsmen admitted to journeymen status learned their trades directly through these two methods.

Open shop training was more important for sheet metal workers, the pipe trades, ironworkers, and electricians, while serving as laborers and helpers was a more important source of training for carpenters and bricklayers. The importance of getting in when unions organize open shops varied from place to place but was especially important in Houston, which has a relatively large nonunion sector. Only about 10 percent of these journeymen had been trained in public vocational schools, although 22 percent of bricklayers had received this form of training.

While it accounted for the training of only 5 percent of all of the informally trained journeymen, almost a fourth (23 percent) of the electricians had been trained in private vocational schools. Other related industrial experience was reported by 12 percent of the journeymen in our sample but was an especially important source of training for electricians and ironworkers. This form of training was very important in San Francisco, where many craftsmen were trained in the shipyards, and in Houston, where the oil fields and shipyards were important sources of craftsmen.

The military was a source of training for 11 percent of our interviewees but accounted for 15 percent of electricians, 13 percent of carpenters, and 12 percent of ironworkers. Only 2 percent of our interviewees had participated in government training programs, but 7 percent of electricians had received this form of training. Ten percent of the journeymen had had no training at all before joining the union; 20 percent of the ironworkers were in this category. These workers ordinarily first worked on permits and then became journeymen.

Apprenticeship Training and Employment and Earnings

In construction, more than in any other industry, regularity of employment serves well as an indication of attractiveness of a worker to employers and as a good proxy for his earnings. This is largely because of the casual and unstable relationship between workers and employers and because all journeymen receive the same wage rate. There is no wage hierarchy such as exists in other industries. A less skilled man in another industry might work just as regularly as his better skilled counterpart but at a reduced rate. In construction, the less skilled man works at the same rate but for fewer hours than his better skilled counterpart. Stated another way, the rewards for good work in the building trades are steady employment (considered in this section) and/or promotion (considered in the following section).

The claim that apprenticeship graduates tend to work more regularly than journeymen admitted through other routes was tested by drawing samples of journeymen's names and the hours they worked in recent years from each cooperating union's pension or health and welfare fund eligibility list.[15] To reduce methodological problems, the names of traveling members of other locals, nonmembers working on temporary permit, paid union officials, members identified as having joined the union or retired during a sampled year, inactive members, current apprentices, and those who had died were excluded from the sample.

The names remaining in the samples were those of active journeyman members of the unions being studied. In order to trace apprenticeship backgrounds, the names were checked with apprenticeship coordinators and with records kept by the Bureau of Apprenticeship and Training and State apprenticeship agencies to determine which journeymen had completed apprenticeship programs.

The employment experience of the apprenticeship graduates was then compared with the others. The results of the comparison, shown in table 4, emphatically support the hypothesis that apprenticeship graduates tend to work more steadily than informally trained journeymen. Of 119 percentage

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[15] We attempted to obtain at least 10 percent samples of all but the largest unions, although this was not always possible. Our samples ranged from 1 percent of the active membership of the Bricklayers Executive Committee in New York (whose officials would allow only a small sample) to over 20 percent of the membership of some smaller locals. Samples were obtained from each cooperating local in all nine cities.

TABLE 4. DISTRIBUTION OF DIFFERENTIALS IN AVERAGE HOURS WORKED BY APPRENTICE-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY DIRECTION AND SIZE OF PERCENTAGE DIFFERENTIAL: BY TRADE

Trade	Differential Negative (Not in favor of apprenticeship graduates)			Differential Neutral	Differential Positive (In favor of apprenticeship graduates)				Total observations
	-10% or below	-1.0% to -9.9%	-.1% to -.9%	Zero	.1% to .9%	1.0% to 9.9%	10.0% to 19.9%	20.0% and above	
Bricklayers	1	3	1		1	8	4	3	21
Carpenters						9	18	2	29
Electricians		1				7	4	4	16
Ironworkers		2				7	4	1	14
Plumbers and Pipefitters		1	1	1	2	18	1	1	25
Sheet Metal Workers		1			3	7		3	14
Total, all trades	1	8	2	1	6	56	31	14	119

SOURCE: Calculated from data in Tables 57 through 62, which were derived from samples of hours worked obtained from union fringe benefit records.

differentials in average annual hours worked by apprenticeship graduates and others, 100 were greater than 1 percent. Only 10 differentials were less than -1 percent, while 9 fell between -.9 percent and .9 percent. Thus 84 percent of the cases support the hypothesis that apprenticeship-trained craftsmen are more broadly trained and suffer less from unemployment than other journeymen.

Further, among the 41 local jurisdictions in which these 119 observations were made, apprenticeship-trained men worked consistently more than others in 32 jurisdictions. Moreover, the hours-worked differentials which are favorable to apprenticeship as a source of training are as large as they are numerous. There were 31 differentials between 10 percent and 20 percent, 11 between 20 percent and 40 percent, and 3 exceeding 40 percent. Thus, nearly half of the "favorable" comparisons exceeded 10 percent; by contrast, only one "unfavorable" comparison (-17.6 percent) was below -10 percent.

Problems of Interpretation

In spite of their strong support for the superiority of apprenticeship-trained journeymen, our results are subject to a number of data limitations:

(1) Our data are often incomplete because we depended heavily on local union cooperation, which, in some cases, was not forthcoming.

(2) Our data also undoubtedly are biased by factors other than training, such as illness. However, while we might have missed some illness because of inadequate information, there is little reason to suspect that this factor influenced apprenticeship-trained journeymen any more than it did those who were informally trained.

(3) Similarly, factors like favoritism toward friends, nepotism, age, and incidence of moonlighting affect hours worked, but there is no reason to assume that these had more influence on apprentices than informally trained journeymen. There is a possibility that nepotism and business agents' biases toward apprenticeship could have influenced hours worked, but we have no evidence on this point. We consider it unlikely, however, that business agents would discriminate against the majority of their members, who have not served apprenticeships.

Similarly, since apprenticeship programs have been registered only since the National Apprenticeship (Fitzgerald) Act of 1937, apprenticeship-trained journeymen are, on average, a younger group that others. However,

since the advantageous effects of experience probably balance the disadvantageous effects, the younger age of apprenticeship-trained journeymen probably would not give them an undue advantage in hours worked.

Journeymen moonlighting as contractors would tend to have fewer hours reported to the pension funds, since only hours worked as employees are reported. The effect of moonlighting on our results is probably insignificant, because the practice is forbidden by most unions and because we excluded journeymen who were known to have moonlighted. Any moonlighters remaining in the samples may have been informally trained journeymen who had to work as contractors on small jobs because they could not work regularly as journeymen.

On the other hand, moonlighting is a transitional step to becoming full-fledged contractors and since the best craftsmen are likely to become contractors, apprenticeship-trained men would be more than proportionately represented among those workers who moonlight as contractors. However, on the whole, we do not know whether or not this influence affects one group more than the other.

(4) The incidence of traveling also may bias the average hours worked in favor of apprenticeship-trained journeymen. Travelers were excluded from the samples, but if a member of the local under study traveled outside the area in which his pension fund was in effect, his hours worked for the year may be understated. Apprenticeship graduates probably travel less than other journeymen since they are less likely to be forced to seek employment in other areas because of unemployment in their home locals. While this phenomenon would bias the hours-worked comparisons in favor of apprenticeship graduates, the results would be consistent with the hypothesis that the better trained journeymen are products of the apprenticeship system.

(5) Referral systems could have an important influence in reducing the distinction between journeymen with different types of training. If a formal "hiring hall" system is used or if the referral system is organized on a "first in, first out" basis, as in some plumbers' locals, the referral system may have the effect of assisting less competent people to find jobs, thus effectively reducing the influence of training on hours worked.

On the other hand, if apprenticeship-trained craftsmen occupy preferred classifications, as they do in most electrical workers' locals, the referral system will cause ex-apprentices to work more hours. However, this factor is compatible with the

hypothesis that apprenticeship-trained journeymen work more because of their training, because workers who are more competent probably tend to occupy the preferred positions.

(6) It also is possible that the superior performance of apprenticeship-trained journeymen could be due to selectivity of people with more education, native ability, motivation, or attachment to labor markets rather than to the nature of the training per se. Our interviews with the journeymen themselves suggest that apprenticeship-trained journeymen have higher average levels of formal education and are more likely than informally trained craftsmen to have received trade-related vocational education (15 percent of apprenticeship graduates as opposed to 10 percent of the others).

There is no evidence that nonvocational education gives an advantage to apprenticeship-trained journeymen. However, vocational education probably helped those who received it, although many union spokesmen contend that construction craftsmen are better off without vocational education outside the apprenticeship system.

"Native ability" and greater attachment to labor markets could bias our results, but we have no way of knowing in which direction. Presumably, the fact that apprenticeship-trained journeymen are more likely to have friends and relatives in the construction industry gives them greater attachment to the market, but this is more likely to have motivated them to seek entry to apprenticeship programs in the first place than to want to work more hours after they become journeymen.

(7) There also is a possibility that the superior performance of apprenticeship-trained journeymen is due to journeyman upgrading programs and not to apprenticeship training. Our interviews show this to be a possibility because informally trained journeymen are somewhat less likely to participate in upgrading programs.

Thus, our results are not conclusive, but they strongly support the hypothesis that apprenticeship training produces journeymen who are superior to those with informal training.

Apprenticeship Training and Advancement to Supervisory Positions

There is a prevailing belief in the industry that the broad range of skills acquired in apprenticeship, including blueprint reading and layout work, should prepare apprentices to advance into supervisory positions easily. If this is true, apprenticeship graduates should appear as foremen and superintendents in relatively greater numbers than informally

trained craftsmen. Further, among a given group of active journeymen, apprenticeship graduates would be expected to have advanced to supervisory status more often and faster than workers trained in other ways.

To test the merits of apprenticeship in providing a better upgrading outlook for its graduates, two measures were used. First, surveys of supervisory personnel were made with cooperative contractors, and the percentages of apprenticeship graduates among the supervisory work force surveyed were compared with the percentages of apprenticeship graduates among the journeyman samples drawn for the hours-worked comparisons. Second, questions about supervisory experience were asked of the 1,234 journeymen interviewed.

The results of the survey of supervisory personnel, shown in table 5, indicate that, with some variation by trade, generally apprenticeship-trained craftsmen are more heavily represented in supervisory positions than in the union membership as a whole. In 17 cases, the percentage of apprenticeship-trained supervisors exceeded the percentage of apprenticeship-trained journeymen by 5 or more percentage points. In six other instances, there were absolute differences of fewer than 5 percentage points. Thus the number of comparisons "favorable" to apprenticeship training was more than three times greater than the number of "unfavorable" comparisons, while several cases contained ambiguous results.

Unfortunately, there were few returns from general contractors who employ many bricklayers, carpenters, and ironworkers. Since electrical, sheet metal, and plumbing contractors were quite responsive, most of the comparisons were obtained from those crafts. Interestingly, the latter are the crafts requiring the greatest nonmanipulative skills; perhaps that is why apprenticeship graduates in those trades seemed to fare so well in the comparisons of supervisory personnel.

The data from the journeymen interviews were even more favorable toward apprenticeship. The apprenticeship-trained journeyman was more likely to work regularly as a supervisor in all trades except ironwork. Further, apprenticeship graduates in every trade advanced to supervisory status more rapidly than did other journeymen. On average, apprenticeship graduates advanced from journeyman to supervisor faster than did journeymen trained in other ways by 4.7 years in electrical work, 4.5 years in ironwork, 4.3 years in sheet metal work, 3.5 years in bricklaying, 1.4 years in carpentry, and .6 years in plumbing and pipefitting.

As in the hours-worked study, numerous alternative explanations are available for the phenomenon of relatively large numbers of apprenticeship graduates in the supervisory ranks.

TABLE 5. DISTRIBUTION OF DIFFERENTIALS IN PROPORTIONS OF APPRENTICESHIP GRADUATES AMONG JOURNEYMEN AND SUPERVISORS SURVEYED, BY DIRECTION AND SIZE OF PERCENTAGE DIFFERENTIAL: BY TRADE

Trade	Differential Negative (Not in favor of apprenticeship graduates)				Differential Neutral	Differential Positive (In favor of apprenticeship graduates)					Total observations
	-20.0% or below	-10.0% to -19.9%	-5.0% to 9.9%	-.1% to -4.9%	Zero	.1% to 4.9%	5.0% to 9.9%	10.0% to 19.9%	20.0% to 29.9%	30.0% and above	
Bricklayers.....	1					1				2	4
Carpenters			3								3
Electricians				1	1	1	2	2			7
Ironworkers				1			2				3
Plumbers and Pipefitters.....							1	2	1	1	5
Sheet Metal Workers						1	3	1	1		6
Total, all trades..	1		3	2	1	3	8	5	2	3	28

SOURCE: Calculated from data in Table 63, which were derived from surveys of supervisory personnel.

Most of these -- favoritism, the effects of native ability or education, greater attachment to the labor market, or the effect of journeyman upgrading -- have been dealt with already. An additional explanation -- a natural proclivity toward organization of effort and leadership ability -- is tempting, but the best mechanic is not necessarily the best supervisor, although craftsmen probably are likely to respect competence in a foreman or supervisor.

The age factor probably works against apprenticeship graduates becoming foremen and superintendents. Apprenticeship graduates are younger, on the average, than other mechanics because apprenticeship programs are relatively new in many areas, and many graduates are comparative newcomers to their crafts. Some contractors have employed the same supervisors for years and are reluctant to replace them with younger hands, thus making accession to the supervisory ranks difficult for otherwise qualified apprenticeship graduates. Still, the high proportion of former apprentices in supervisory positions indicates that apprenticeship training imparts skills which would otherwise be learned only through many years of work experience.

Minority Participation

The issue of minority participation in the construction industry has received considerable attention in recent years. Traditionally, minorities, and especially blacks, have been greatly underrepresented in the mechanical crafts in both apprenticeship and journeymen positions. There have been some significant changes at the apprenticeship level since 1960, when minorities constituted only 2.2 percent of apprentices in the United States. By 1972, however, largely as a result of the apprenticeship outreach program, minorities constituted 15.1 percent of apprentices. The apprenticeship outreach concept was successful mainly because it presented a method of gaining entry for minorities that was compatible with the legitimate interests of the industry and because the concept was based upon a realization that changing institutionalized racial patterns required conscious effort by a dedicated staff denoted to a single objective. Less progress has been made in getting minorities into journeymen positions through the nonapprenticeship route.

Our interviews throw some light on the nature and extent of minority participation in the construction industry. We consider our sample to be fairly representative in the aggregate, since minorities represented 9 percent of our interviewees, about the same as their membership in all unions. Moreover, our minority interviewees were distributed among the crafts in about the same way as they are known to be represented in the whole industry -- greater representation in the trowel trades and as carpenters

than among the mechanical crafts. Our results show more minorities than whites have entered their crafts through non-apprentice routes. For all of our interviewees, respondents were about equally divided between those who had entered through apprenticeship and those who did not, whereas minorities were almost twice as likely to have entered through nonapprenticeship channels.

Our evidence also shows minorities to be increasing in proportion of construction craftsmen. They constituted 6 percent of those admitted before the 1950's, 10 percent of those admitted during the 1950's, but 14 percent of those admitted between 1960 and 1972.

Our studies also show minorities less likely than whites to have friends and relatives in the trades. However, those who entered through nonapprentice channels were about as likely as whites to have fathers in the trades, but less likely to have fathers in the unions. Minorities who served apprenticeships were much less likely to have fathers in the trades but more likely to have fathers who were union members; which undoubtedly reflects the influence of apprenticeship outreach programs, which recruit from a variety of sources as contrasted with the greater reliance of "natural" recruitment of other workers through friends and relatives. There is evidence, however, that those who have gone through the outreach programs are likely to refer their friends and relatives to the program.

Minorities who come through apprenticeship programs are more likely to serve all or most of the time as foremen and supervisors than those who come into the crafts through other means, but minorities served less often in supervisory positions than whites.

Minorities who come through nonapprenticeship routes are more likely than whites to have some formal training before entering the trades. Vocational education has been a particularly important source of minority bricklayers and armed forces training was important for minority carpenters' interviewees.

Our evidence therefore supports the conclusion that the outreach programs have done a great deal to increase minority participation in apprenticeship programs in crafts from which they previously were underrepresented or not represented at all but less has been done, relatively, to increase the number of black journeymen in these crafts. Nevertheless, our sample suggests that the percentage of minority journeymen and apprentices are increasing and that the proportion of minorities in our sample entering through nonapprenticeship routes is

greater than that of whites, suggesting that unions have not "closed the back door" to minority entry as is often claimed. Finally, we also have evidence that, once in, minorities are likely to "institutionalize" the entry of minority craftsmen through referring their friends and relatives to the unions.

It was not our purpose to analyze the forces influencing minority entry in the construction industry, but the overwhelming impression from our interviews is that unions have been responding to civil rights groups and laws and other legal measures making discrimination illegal. In their response, the unions' attitudes toward apprenticeship and informally trained craftsmen must be considered within the context of union leaders' commitment to protecting and advancing their members' interests while reconciling pressures from employers, government agencies, and community groups. National union leaders realize that a failure to respond to pressures to end discrimination will threaten these mechanisms and therefore tend to support programs like apprenticeship outreach which are compatible with the preservation of traditional control mechanisms while facilitating orderly changes in minority participation patterns.

Summary Findings

Despite inherent methodological and data problems, our study provides strong evidence that apprenticeship training gives construction craftsmen considerable advantage over those trained by informal means. Apprenticeship graduates worked more steadily, learned the trade faster, were more likely to be supervisors, and acquired supervisory status faster.

While many construction craftsmen have not served apprenticeships, all unions, with the apparent exception of the bricklayers, started giving increasing emphasis to apprenticeship during the 1950's and 1960's. A large majority of those not serving apprenticeship learned their trades in open shops or while working as laborers or helpers. While all other sources of training were less important, significant numbers of particular crafts were trained in vocational schools, other industries, and the military.

Generally, the entry requirements reported by union officials resembled those reported by journeyman interviewees, although in some cases, like the experience requirements for direct admission, the current journeymen reported lower levels of experience when they entered than the formal requirements. However, the requirements may have changed after these craftsmen entered.

The most stringent requirements for direct admission were imposed by the pipe trades, electricians, and sheet metal workers and the least stringent by the bricklayers and carpenters, with the ironworkers in between. All locals use traveling cards, and some use permits to take in craftsmen who cannot qualify for admission. Generally, these vary with the state of the labor market -- if membership unemployment is low, more permits will be issued.

Our work indicated considerable flexibility in the operation of construction labor markets. A basic problem in this industry is the casual nature of employment. The most stable element in the construction labor market is the union, which performs most of the important training and referral functions in the unionized commercial and industrial sector. In these sectors, the union serves as a source of workers for employers and jobs for workers.

Employers in these sectors usually have an interest in dealing with the union, which provides a supply of labor whose quality is fairly predictable at a contractual wage, both of which facilitate planning and bidding on projects. Residential construction is not as strongly organized, and the unions are weaker in the commercial and industrial sectors in the South than they are in the North and on the West Coast.

An overriding objective is to protect wages and meet employers' manpower needs in such a way as to give them an incentive to continue dealing with the union. In achieving this objective, the union views apprenticeship as a means of turning out a cadre of well trained craftsmen who will have strong attachment to their unions and crafts. Unions realize that they can maintain their competitive position only if their members are more productive than the alternatives available to an employer. Moreover, business agents have considerable difficulty placing poorly trained journeymen and keeping them employed. They therefore tend to prefer apprenticeship to other types of training.

However, there are a number of factors which make it difficult for unions to rely exclusively on apprenticeship as a source of journeymen. For one thing, many craftsmen have learned the trade by other means and could undermine union conditions if they were not organized. Unions will therefore have less rigorous entry requirements in places where there are many workers in open shops, as in Houston, or where there are other industries turning out craftsmen who could work in the construction industry. In our sample, shipyards, oil fields, and industrial maintenance crews were important sources of craftsmen in some trades.

The unions' ability to rely on apprenticeship also will depend on the ease or difficulty of learning the trade without related or classroom instruction. Since parts of even the most demanding trades can be learned on the job, unions always will face some pressures from those who learn their trade from on-the-job training alone. However, the bricklayers, carpenters, and ironworkers face stronger external supply pressures than the sheet metal workers, electricians, and plumbers and pipefitters.

In general, apprenticeship requirements were more standardized, more stringent, and more uniformly enforced than the standards for direct journeyman admission. This situation is not surprising, because the union obviously takes less risk and incurs less cost by admitting a journeyman directly than by accepting an apprentice. It is much easier to determine a journeyman's ability to do the work than to determine the probability that an apprentice will be willing and able to learn the trade. Moreover, the journeyman can be certified for only that specialty within a craft he can perform, while the apprenticeship graduate is expected to be able to perform a larger part of the work in a craft.

These admission standards and permit and traveling card system allow considerable flexibility in adjusting labor supplies to demand conditions. As labor markets tighten, unions can issue permits and admit journeymen as specialists, certified for only part of the craft. Unions can recruit members in open shops, from the ranks of helpers and laborers, and from related industries without threatening the long-run interests of the core of union members trained in apprenticeship. Employers will prefer the better trained journeymen but will not always be able to hire them.

Our work suggests that a major problem for construction labor markets is unemployment caused by the fact that 6 million craftsmen are seeking to fill 3.4 million jobs.[16] Indeed, according to U.S. Department of Labor statistics, in 1972 the construction industry unemployment rate averaged 10.3 percent as compared with 5.6 percent for all workers. As a consequence, many of the construction unions' procedures are based on efforts to protect the conditions of workers who have made heavy investments in their skills and jobs in a very fluid labor market. The obvious solution for those who wish to overcome the "depression mentality" which leads to protective barriers is to reduce unemployment.

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[16]Daniel Quinn Mills, Industrial Relations and Manpower in Construction (Cambridge, Mass.: M.I.T. Press, 1972), p. 4.

Specifically, in the construction industry, public polic could attempt to reduce unemployment by encouraging better management techniques which would reduce overall costs. Under present arrangements, the consequence of poor construct management can be shifted to workers in the form of higher unemployment, since few workers have job rights. Unions could attempt to reduce the employers' motives for creating unemployment by pushing for annual employment guarantees, which would give employers a motive to use better management practices and to bring more pressures on government to maintain full employment.

With respect to the supplies of construction craftsmen, there is no indication that the system is not flexible enough that supplies do not adapt fairly readily to fluctuating demand. As noted above, the unions employ a variety of techniques to achieve flexibility. However, if demand is regularized, there will be a greater demand for well trained craftsmen. Indeed, both craftsmen and consumers would be better off if construction industry training were improved to give more informally trained journeymen the benefits of the apprenticeship system. We therefore recommend:

(1) Expansion and improvement of apprenticeship. The Department of Labor might undertake a number of demonstration projects to improve the nature of apprenticeship training by working with the programs to examine training techniques and ways to improve the operation of the system. The establishment of training laboratories related directly to apprenticeship should be explored.

Demonstration projects also could be launched to expand apprenticeship into new areas. The training laboratories proposed above could explore the feasibility of expanding apprenticeship to new nonconstruction areas as well.

(2) Upgrading programs for construction craftsmen. Unions could do more than they have to actively identify and seek out laborers, helpers, and others who might be upgraded to journeyman status. Unionization of residential construction would bring the benefits of collective bargaining and unionized training programs to these workers. Of course, unions undoubtedly would want to adopt safeguards to prevent nonresidential standards from being weakened by competition from the residential sector. Unions and employers should provide training opportunities making it possible for workers in different sections of the industry to move into the most highly skilled areas.

(3) The establishment of much better recordkeeping and information retrieval systems. Apprenticeship records are, in a craftsman's case, at least as important as college records. Complete and accurate records therefore should be maintained. We found considerable variations in the quality of apprenticeship records from place to place. In one case, for example, we were unable to carry out our analysis as effectively as we would have preferred because a local BAT representative had a directive to dispose of all records over 5 years old!

(4) Broad training of craftsmen by public agencies -- especially Federal installations with construction activities. This would serve the public interest in providing better trained craftsmen. As indicated in our interviews with active journeymen, some construction craftsmen receive their training in shipbuilding and then move to "uptown" construction work. If training of minorities in shipbuilding were improved, such transfers for minority entrants would be facilitated.

(5) Improvement of construction work to attract young workers into the industry. Public agencies, in cooperation with unions, employers, and educational institutions, could do much to combat prevailing biases against manual work. This might be done by making crafts "open ended" by providing for public education facilities, in cooperation with industry representatives, to permit and encourage construction craftsmen to become engineers, architects, and other professional and technical workers, as is done in some European countries.

One encouraging effort in this direction is the Dual Enrollment Program conducted by the International Union of Operating Engineers under funding from the Manpower Administration, U.S. Department of Labor.[17] The Dual Enrollment Program is designed to provide college credit toward an associate of science in engineering degree for work experience and related training received in apprenticeship. In addition, the project seeks to establish linkages with 4-year colleges so that credit earned in the program can be applied toward a bachelor's degree. As of January 1974, Dual Enrollment programs had been negotiated between joint apprenticeship committees and community colleges in almost a dozen places and more than 400 apprentices were participating in the project. Preliminary reports indicated that although the program has not been totally successful at all sites, it has demonstrated favorable results. In brief, it has conferred higher status to participating apprentices, enhanced their motivation to learn and their educational performance, and expanded their career options in construction.

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[17]Reese Hammond, "Dual Enrollment as An Operating Engineer's Apprentice and An Associate of Science in Engineering," (Washington: National Joint Apprenticeship and Training Committee for Operating Engineers, 1974).

In addition to the efforts of the Operating Engineers, other steps are being taken to combine academic credit with apprenticeship training. For example, some union locals studied in the San Francisco Bay area conduct the related training portion of their apprenticeship programs in local community colleges, which in turn offer college credit for this classroom experience. More needs to be done in applying college credit to apprenticeship training, and the aforementioned pilot efforts demonstrate the possibilities.

(6) Measures to increase minority participation. The problem of minority participation in construction apprenticeship programs has been overcome to a substantial degree by the apprenticeship outreach programs, as indicated by an increase in minority participation from only about 2.2 percent of apprentices in 1960[18] to 15.1 percent in 1972.[19]

Our sample confirms the impression that the main area of minority underrepresentation is at the journeyman level, particularly in the pipe, electrical, sheet metal, and ironworkers' crafts. Since most of these crafts are emphasizing apprenticeship as the main entry route for journeyman status, and since minorities are entering apprenticeship programs at an increasing rate, there ultimately will be more minority journeymen -- assuming a satisfactory completion rate for minority apprentices and industry acceptance of minority journeymen on a par with whites.

The main problem, therefore, is the informally trained minority journeymen who, for a variety of reasons, remain outside the unionized sector of the industry. While this study has not provided any way to attach weights to these reasons, some factors are obviously more important than others. Racial discrimination remains important, but contractors and unions also are concerned that public pressures will force them to adopt quotes which they believe might ignore the qualifications problem.

Public policy should therefore attempt to deal with the industry's legitimate interests while seeking to eliminate discrimination based on race. In our judgment, the best way to do this would be to:

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[18]Ray Marshall and Vernon M. Briggs, Jr., The Negro and Apprenticeship (Baltimore, Md.: Johns Hopkins Press, 1967).

[19]U.S. Department of Labor, Office of Information, News Release No. 73-206 (May 27, 1973).

(1) Take measures to reduce unemployment in the industry.

(2) Extend the outreach concept to journeymen. According to Manpower Administration data, existing journeyman outreach programs had placed a total of 6,274 men in 17 project location sites by February 1973.[20] These efforts should be encouraged and continued.

We have no evidence from this study that there are large numbers of qualified minority journeymen who have been denied admission to unions because of their race. However, institutionalized discrimination probably can best be overcome by journeyman outreach programs that seek out workers who can meet the industry's qualifications, as was the case with apprenticeship outreach. This technique would make it possible to determine whether there are many qualified craftsmen who want to be admitted to the construction unions, and whether those who want to be admitted, receive journeyman status. The adoption of upgrading programs, such as the ironworkers' program and journeyman training programs in other crafts, would make it possible for minority craftsmen who are only partially trained to qualify for more highly skilled positions.

Our studies show shipyards to be an important source of journeymen in the construction industry who have not served apprenticeships. This undoubtedly is because shipyard construction journeymen tend to have high turnover rates, probably because the work is more difficult and because wage rates are lower than in commercial and industrial construction. Since many minority construction workers have been trained in the shipyards, it might be useful to establish a demonstration project to recruit journeymen who are learning shipyards for work in commercial and industrial construction. This demonstration project should be preceded by an effort to collect information to confirm:

(a) minorities are going into shipyard work at an increasing rate,

(b) minorities share in the high turnover rate experienced by whites,

(c) whether or not blacks are entering the construction industry when they leave the shipyards at the same rate as whites,

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[20] U.S. Department of Labor, Manpower Administration, "Statistics on Journeymen Outreach and Training Program" (Washington: U.S. Department of Labor, Manpower Administration, multilith, 1973), Table II, "Journeyman Outreach and Training Program Cumulative Total by Program Sponsor."

(d) whether many of these ex-minority shipyard workers would like to enter construction crafts, and

(e) what would be required to get these minorities into the construction unions.

(3) Inject the public's interest into the determination of journeyman qualifications. We have no evidence from this study that unions generally are unduly restricting the numbers of craftsmen or that their qualifications are unreasonable. However, there is a widespread belief that these assertions are true. Moreover, public suspicion will continue as long as the local unions, with a vested interest in controlling entry into the trades, determine the number and qualifications of those to be admitted.

We therefore recommend the establishment of national tripartite (i.e., containing union, management, and public representatives) journeyman standards boards in each craft to adopt uniform national standards and to approve local deviations from those standards. National unions tend to be less restrictive than their locals, so national determination would be more in the public interest. Since local conditions in the construction industry sometime necessitate local variations, such a system could provide for these. Minority representatives also should be involved in the process through which journeymen and apprentices are selected. The tripartite procedures adopted in the so-called "hometown" plans should be studied to see if it is feasible to expand the concept by having a national tripartite board to oversee all of these efforts and hear appeals from them where minorities or industry representatives have local disputes.

(4) Establish an appeals procedure for individuals who think they have been unjustly denied admission. Such an appeals procedure probably would not be used very much, but its availability would have a salutary effect on local officials and would allay public suspicion of the industry. Both the national journeyman standards boards and the appeals procedures should be established at first by industry.

The role of public policy in these efforts might be mainly to encourage them and to defray the costs of programs not directly beneficial primarily to unions or employers. These include the costs of outreach programs and perhaps the costs of the journeyman standards boards and appeals procedures. Of course, government must not permit these procedures to substitute for rigorous enforcement of antidiscrimination laws. We believe, however, that within the framework of effective antidiscrimination laws, these voluntary approaches can be more effective than legal procedures alone.

Groups interested in minority participation in the construction industry should pay particular attention to the ways nonapprentices are admitted to the unionized programs because the programs adopted should be compatible with the realities of these admissions procedures and qualifications. Moreover, attention to these matters might facilitate challenges to standards considered to be discriminatory.

(5) Finally, the process of entry for minorities and whites alike would be facilitated by the issuance of written guidelines for entry into unions through the nonapprenticeship method. These guidelines need not be rigid, and, indeed, might state the conditions under which they might be relaxed or waived. These guidelines could be adopted through the tripartite mechanism suggested above for the adoption of standards and procedures.

Chapter II

THE CONSTRUCTION INDUSTRY AND THE BUILDING TRADES

Contract construction comprises three major sectors: highway and heavy (including tunnel and pipeline work); commercial and industrial; and home building, which includes single-family and multi-family low-rise units. Home building is sometimes confused with "residential" construction, which includes both home building and high-rise apartment building. Contracting firms are of two major types: general contractors, who undertake entire projects, and specialty contractors, who do parts of larger jobs. Although there are many large and highly visible contractors with nationwide operations, the vast majority of contractors are small firms, usually specialty contractors, who hire only a few workers. Many firms, in fact, consist of only the contractor who works with his tools and operates almost entirely in relatively small local areas.[1]

Employment Patterns in Construction

It is difficult to specify the number of construction workers, because employment in this industry is subject to marked variations. Not all construction workers are employed full time in the industry; many spend part of each year either idle or working in other industries. Dunlop and Mills estimate that in 1963, 5.4 million men filled the equivalent of 3 million year-round jobs in contract construction. The ratio of 1.8 men per job also prevailed in 1970, when more than 3.4 million jobs were provided by contractors who, because of turnover, employed more than 6 million at one time or another.[2]

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1 For further information concerning the types of firms which comprise the construction industry, see William Haber and H. M. Levinson, Labor Relations and Productivity in the Building Trades (Ann Arbor: Bureau of Industrial Relations, University of Michigan, 1956), pp. 24-26.

2 Daniel Quinn Mills, Industrial Relations and Manpower in Construction (Cambridge, Mass.: M.I.T. Press, 1972), p. 4.

There are significant seasonal and cyclical variations in employment. Because of weather conditions, especially in the North, construction activity contracts during the winter and expands during the summer.[3] Numerous workers are attracted into construction from other industries during periods of intense activity; when payrolls are cut back, casual workers are displaced.

Employment in construction, more than in any other industry, is affected by changes in monetary policy. Because financing is such an important construction cost, and because most building can be postponed if interest rates are high, construction employment is quite sensitive to changes in the cost of borrowing money. Thus construction activity and employment -- particularly in home building -- tend to vary

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[3]During the late 1960's much work was devoted to problems of seasonality in construction and ways in which it may be counteracted. See, for example: Robert J. Myers and Sol Swerdloff, "Seasonality and Construction," Monthly Labor Review, Vol. 90, No. 9 (September 1967), pp. 1-8; J. A. Russo, et al., The Operational and Economic Impact of Weather on the Construction Industry of the United States (Hartford: Travelers Research Center, 1965); U.S. Department of Labor, Bureau of Labor Statistics, Seasonality and Manpower in Construction, Bulletin 1642 (Washington: Government Printing Office, 1970); Howard G. Foster, "Labor Force Adjustments to Seasonal Fluctuations in Construction," Industrial and Labor Relations Review, Vol. 23, No. 4 (July 1970), pp. 528-540; U.S. House of Representatives, Committee on Education and Labor, Seasonal Unemployment in the Construction Industry, Hearings on HR 15990 before the Select Subcommittee on Labor, 90th Congress, 2nd Session (Washington: Government Printing Office, 1968); Jan Wittrock, Reducing Seasonal Unemployment in the Construction Industry (Paris: OECD, 1967); E. Jay Howenstine, "Programs for Providing Winter Jobs in Construction," Monthly Labor Review, Vol. 94, No. 2 (February 1971), pp. 24-32; U.S. Building Research Advisory Board, National Academy of Sciences-National Research Council, Proceedings of the Year-Round/All Weather Construction Conference (Washington: U.S. Building Research Advisory Council, 1968); Associated General Contractors, Proceedings of the AGC Conference on Seasonality in Construction (Washington: Associated General Contractors of America, 1968); "Report by Secretaries of Labor and Commerce on Seasonality of Employment in the Construction Industry," Daily Labor Report (October 8, 1968).

inversely with the movement of interest rates. A side effect of this phenomenon is that when general economic activity is slack, interest rates tend to fall, stimulating construction employment. On the other hand, when aggregate demand is high and interest rates are rising, construction employment tends to be reduced.[4]

The Building Trade Unions

Dunlop and Mills have estimated that for the Nation as a whole, roughly 80 percent of the regular construction work force had been organized by trade unions, although this estimate varied by trade, geographical area, and industry segment.[5] Home building is much less unionized than commercial and highway and heavy construction. Large cities, especially in the North, are more highly unionized than small cities. Further, the casual labor force is much less unionized than full-time construction workers; thus when both the seasonal construction labor force and the regular construction labor force are taken into account, not nearly 80 percent of construction workers are unionized.

The 17 national construction unions affiliated with the AFL-CIO are organized into the federation's Building and Construction Trades Department.[6] The main non-AFL-CIO union

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[4]For an exposition and clarification of the relationship between credit conditions and residential construction, see Larry Jack Kimbell, "An Econometric Model of Residential Construction and Finance" (unpublished Ph.D. dissertation, University of Texas at Austin, 1968).

[5]John T. Dunlop and D. Quinn Mills, "Manpower in Construction: A Profile of the Industry and Projections to 1975," in Report of the President's Committee on Urban Housing -- Technical Studies, Vol. 2 (Washington: Government Printing Office, 1968), p. 244.

[6]Asbestos workers; boilermakers; bricklayers; carpenters; electrical workers; elevator constructors; granite cutters; ironworkers; laborers; lathers; marble polishers; operating engineers; painters; plasterers and cement masons; plumbers and pipefitters; roofers; and sheet metal workers. See U.S. Department of Labor, Bureau of Labor Statistics, Directory of National Unions and Employee Associations, 1971, Bulletin 1750 (Washington: Government Printing Office, 1972), p. 5.

representing construction workers is the International Brotherhood of Teamsters. Many of these trades have members who work outside of construction -- e.g., in the metal trades department of the plumbing industry, in electrical manufacturing, in shop work of various types -- but most members are employed in on-site construction.

Local building trades unions are chartered by the internationals. Where an international union charters several locals in a city, district councils are formed to bargain, coordinate apprenticeship programs, and administer pension and welfare funds. In addition, locals of different international unions usually belong to local building trades councils, much as the international unions belong to the nationl AFL-CIO's Building and Construction Trades Department. The local building trades councils function as construction labor's voice in public and political affairs but have little economic power within the industry.

Most of construction labor's economic power is concentrated in the locals or district councils rather than at the international level (contrary to the case of many industrial unions, where power is more centralized in the internationals). The localized power structure of the building trades unions is derived from the decentralized structure of the construction labor market. Since most contractors operate within small geographical areas (usually a large city or several counties), the construction labor market is a localized, rather than a sectional or national, market. Each craft's collective agreement is typically made at the local level between the local union or district council and the group of contractors which hires the union's members. For example, the Electrical Workers' local union in Atlanta bargains with the Atlanta chapter of the National Electrical Contractors Association, while the Operating Engineers have a contract with the Atlanta chapter of the Associated General Contractors. These contracts cover wages, working conditions, and contributions to pension, health, and vacation funds and apprenticeship programs.

Although local bargaining is the most common practice, agreements at other levels are also important. One is the national contract between an international union and its corresponding employers' association. Some of the agreements delineate the conditions under which a national contractor may work in a given area with a local collective bargaining agreement. Others, such as those of the plumbing industry, establish industrywide apprenticeship programs; still others provide dispute settlement procedures in cases of impasse at the local level. Another increasingly important type of

contract in the West and South is the regional agreement, in which several counties or even parts of States may come under the terms of one collective agreement.[7]

Whatever the scope of the collective agreement, the division of labor by crafts often leads to friction between building trades unions over the allocation of particular types of work. Although there are agreements among unions delineating the work that may be done by members of each union, the introduction of new materials and processes not covered by these agreements causes disputes between crafts over the allocation of work. Frequently, illegal jurisdictional strikes result from such disputes.

However, the industry has developed machinery to settle jurisdictional disputes without work stoppages. Most contracts designate the National Joint Board for the Settlement of Jurisdictional Disputes, composed of union and contractor representatives and a neutral umpire, and the National Appeals Board as the bodies to which jurisdictional disputes should be referred. The National Labor Relations Board may also intervene, but contractors and unions seem to prefer the simpler and faster private dispute settlement procedures.[8]

Unions as Suppliers of Construction Manpower

A very important feature of the construction industry is the fact that unions act as employment agencies for their members and contractors. Few contractors are big enough or diversified enough to employ large permanent work forces. The volume of business -- and therefore the demand for labor -- expands and contracts often, sometimes dramatically. Contractors thus typically maintain small (if any) permanent cadres of supervisors and key journeymen and rely on the unions to refer men to their jobs when activity increases.

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[7]John Dunlop, "The Industrial Relations System in Construction," The Structure of Collective Bargaining, ed. Arnold Weber (New York: Free Press of Glencoe, 1961), pp. 264-269.

[8]Mills, Industrial Relations and Manpower in Construction, pp. 20-21.

The most powerful construction union official typically is the local business agent. He is charged with the day-to-day operations of the union, and since he is an elected official, to remain in office he must keep his constituency happy. His most crucial task, though -- and probably the most sensitive in terms of social dynamics -- is the referral of workers to contractors who need labor. As a manpower broker in an industry which is heavily dependent on quality manpower, the business agent has considerable influence.

Contrary to widespread belief, however, business agents do not have absolute control of the supply of skilled mechanics, nor are union hiring halls the only source of labor for union contractors. In fact, the hiring hall was uncommon in the construction industry while the closed shop was a legal institution, for as long as union membership was a prerequisite for employment, unions did not need to oversee the referral system. With the proscription of the closed shop by the Taft-Hartley Act, however, unions began to use exclusive hiring hall arrangements, supplanting the closed shop with control over job referrals.[9]

Although the National Labor Relations board (NLRB), in the 1958 Mountain Pacific case, held referral procedures which discriminated against nonmembers to be illegal[10] and subjected offending unions to severe financial penalties under the Brown-Olds decision,[11] the NLRB also indicated that unions could operate nondiscriminatory hiring halls. Subsequently, and partially as the result of union pressure, the Landum-Griffin Act of 1959 amended Section 8(f) of the Taft-Hartley Act to allow unions to operate exclusive hiring halls if the referral procedures used objective and nondiscriminatory criteria such as length of training, proper employment under collective bargaining agreements, work experience, and the like. This provision, coupled with the Supreme Court's rejection of the

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[9]Philip Ross, "Origin of the Hiring Hall in Construction," Industrial Relations, Vol. 11, No. 3 (October 1972), pp. 366-379.

[10]Mountain Pacific Chapter [of Associated General Contractors], 119 NLRB 883 (1958), 41 LRRM 1460.

[11]115 NLRB 594 (1956), 37 LRM 1360.

Mountain Pacific ruling,[12] firmly established the hiring hall as a legitimate union function.[13] Thus, in theory, referral procedures do not favor members over nonmembers.

In practice, however, unions usually give preference to members regardless of the terms of collective agreement, and contractors acquiesce in order to avoid trouble with the unions. When a nonmember is hired in a State where union shop provisions are legal, he may be required to join the union after 7 days as a condition of continued employment. If the union then refuses to accept him as a member, he may continue to work regardless of union policies.

The above description of referral systems and hiring halls should not imply that the building trades apportion manpower according to strict, formal procedures. With some exceptions, usually in the pipe and electrical trades, the unions we studied that have referral systems (not all do) use informal hiring procedures. Most union construction workers find work through individual job search, not through the unions. A union journeyman who has worked in an area for a year or two has come to know other journeymen, foremen, superintendents, and contractors. If he is laid off, he learns about other job opportunities by word of mouth. In fact, if he is a good mechanic, he may be specifically requested by a supervisor or contractor. Of course, he may indicate to the business agent that he needs a new job, and when a contractor asks for men he may be referred out by the agent. By and large, however, competent mechanics make little use of the hiring hall except during times of low employment, when the business agent's contacts are valuable to even the best workers.

Training for Construction Skills

Large numbers of journeymen have never received formal training in their crafts; they simply "picked up the trade" by working at one job after another until they acquired a wide range of job skills. However, many informally trained men have only one or a few skills. Due to lack of opportunity, ability, or motivation, they never learned all of their trades, and consequently they are at a disadvantage when competing in the market with thoroughly trained mechanics. Since those positions require an understanding of all

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[12] Local 357, Teamsters v. NLRB, 365 U.S. 667 (1961), 81 S. Ct. 835, 47 LRRM 2906.

[13] For a detailed description of hiring hall systems and public policy regarding same, see U.S. Department of Labor, Exclusive Union Work Referral Systems in the Building Trades (Washington: Government Printing Office, 1970).

activities being supervised, it is also uncommon for a narrowly trained journeyman to work as a foreman or superintendent.

Union officials and contractors interviewed during this project feel that broadly trained men are most likely to come from the apprenticeship system. Apprenticeship in the building trades is typically a 3- to 5-year program which combines on-the-job training for a wide variety of skills with classroom instruction in such related subjects as mathematics, blueprint reading, drafting, and layout work.

Apprenticeship programs are financed by monies from negotiated fringe benefit funds and are administered by joint apprenticeship committees (JAC's) comprised of labor and contractor representatives. Apprentices are usually indentured to a contractor or to the union. It is increasingly the case for effective programs to be administered by full-time apprenticeship coordinators, who see that the program is followed, enforce class and job attendance, make sure that apprentices are moved from job to job in order to broaden their skills, and run the business end of the program. The graduate of a well organized apprenticeship program is a journeyman who has learned the practical skills of the entire trade, along with the "theory" of the trade which he must have in order to become an effective supervisor. In fact, a common criticism of apprenticeship is that it has become a training ground for foremen, teaching more than most journeymen need to know.[14]

Union Attitudes Toward Admissions

The positions taken by union officials concerning admissions policies vary widely. International union officers, viewing the economic and political strength of their organizations in terms of numbers of men organized, press for liberal

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[14]Further information regarding the apprenticeship system may be found in F. Ray Marshall and Vernon M. Briggs, The Negro and Apprenticeship (Baltimore: Johns Hopkins Press, 1967), pp. 11-25; George Strauss, "Apprenticeship: An Evaluation of the Need," in Employment Policy and the Labor Market, ed. Arthur M. Ross (Berkeley: University of California Press, 1965); and U.S. Senate, Committee on Labor and Public Welfare, The Role of Apprenticeship in Manpower Development (Washington: Government Printing Office, 1964). See also U.S. Department of Labor, Bureau of Apprenticeship and Training, The National Apprenticeship Program (Washington: Government Printing Office, 1972).

admissions standards. Local officials, on the other hand, are jealous of their control over memberships and are especially eager to protect union wage rates. Thus, local officers sometimes wish to restrict the number of men working at the trade in order to maintain the union rate.

The degree of unionization of a local labor market affects local officials' opinions as to the most desirable method of entry. In highly unionized areas such as New York City, Chicago, or San Francisco, there is relatively little competition from nonunion workers. The unions in those cities tend to use apprenticeship selection procedures to limit the number of new mechanics in the trades. In less organized areas, however, nonunion labor is viewed as a real threat to union jobs; the unions, therefore, use direct admissions and organization of open shops as major routes of entry in efforts to unionize the market more thoroughly.

Finally, business agents refuse to allow nonmembers to work when there is not enough work for union members. However, when the volume of construction activity increases, some unions allow nonmembers to work within their jurisdictions; virtually all locals allow travelers from "sister" locals to work when there are more jobs than the local members can fill. Also, market conditions determine the willingness of most local unions to allow members of other locals to transfer their membership into their jurisdictions. It is easier for a member to transfer when work is plentiful than during periods of slack employment.[15]

Minority Hiring Plans

In the 1960's, there was pressure on the unions to admit more blacks and other minority groups to membership. As of December 31, 1972, plans had been negotiated by or imposed on unions in 58 cities in order to increase minority participation in construction. The plans were designed to recruit qualified minority journeymen and apprentices who could enter the unions through traditional channels.

Moreover, the plans established categories of "trainees" -- young men who could not qualify for apprenticeship programs -- and "advanced trainees" -- older men whose experience in

[15]Jack Barbash, "Union Interests in Apprenticeship and Other Forms of Training," Journal of Human Resources, Vol. 3, No. 1 (Winter 1968), pp. 63-85.

construction was not sufficient to qualify them as journeymen but who were too old to enter apprenticeship programs. Although some unions supported them, these new categories were opposed by many labor organizations on the grounds that the men placed in them would never really be trained to do journeyman work and thus that trainees were deluded into thinking that the plans would lead to permanent employment in construction. Unions resisted new categories as forces undermining the apprenticeship system.

Minority representatives contended that since most white journeymen were not trained in apprenticeships, unions should not attempt to force minority aspirants to go through the long apprenticeship process in order to become journeymen. The minorities also asserted that new routes of entry, including the "trainee" routes, were necessary because the "traditional" routes effectively closed many trades to minority memberships. These traditional routes of entry are examined in the following chapter.

Chapter III

TRADITIONAL ROUTES OF ENTRY INTO THE CONSTRUCTION UNIONS

There are several formal and informal methods by which a journeyman may work under the jurisdiction of building trades unions in a given area. He may, as is increasingly the case, be indentured as an apprentice, serve from 3 to 5 years in a coordinated program of training on the job and related classroom instruction, and be certified as a journeyman at the end of the program. He may, on the other hand, simply apply for membership as a journeyman on the basis of having "picked up the trade" informally by working in open shops, as a laborer or helper, or in the military. Men who enter unions in this manner are sometimes called "Joe Magees" or are said to have entered "off the street" or "through the back door." It is quite common for a number of these men to join when an open shop is organized. They are usually given either a written or a practical test over their knowledge of the trade, sometimes after a short probationary period. If a man is already a local union member, he can usually transfer his membership to another local union within the international. Finally, a man who is not a local union member may work temporarily under the union's jurisdiction. Some locals will work only "travelers" from other locals within their international; others will issue "permits" to nonunion men as well. Some locals charge fees for permits or traveling cards; others do not.

An understanding of the above process is crucial to an appreciation of the means by which the construction labor force adapts to changing demand. For example, temporary permits and traveling cards are almost nonexistent during times of high unemployment; yet when work is plentiful, the wide use of permits allows workers to gain the experience needed to qualify as journeymen later. Where largely nonunion residential construction sectors exist, as in the South and in smaller cities outside the South, they supply many journeymen to the commercial and industrial construction unions, whereas the absence of a large unorganized building industry in New York, Chicago, and San Francisco makes it more difficult for the unions in those areas to expand the work force when activity increases. The volatile nature of demand for construction labor dictates frequent layoffs, usually of less skilled men. The burden of these layoffs, as will be shown, falls most heavily on those who do not have the broad training offered in apprenticeship programs; their skills are not sufficiently flexible to allow them to compete in slack labor markets.

The remainder of this chapter details the qualifications required of workmen in the building trades and the traditional processes through which employment is attained. Information on these processes came primarily from interviews with union officials, employer representatives, and other knowledgeable individuals. The bibliography contains a complete list of all persons (except for rank-and-file journeymen) interviewed during the course of this study.

Bricklayers

The subordinate unions of the Bricklayers, Masons, and Plasterers' International Union have jurisdiction over all masonry trades in commercial, industrial, residential, and specialty construction. Included under these categories are bricklayers, stone masons, marble masons, tile setters, terrazzo workers, mosaic workers, plasterers, cement masons, and a host of specialty occupations dealing primarily in the area of recent developments in construction materials.

Nearly all of the bricklayers' unions in our study were "mixed" locals (locals with jurisdiction over all masonry work in their areas). New York was an exception to this rule, with many specialized locals, including seven locals which do brick masonry only. The New York Bricklayers Executive Committee is composed of an elected representative from each local and is headed by an executive secretary elected by the membership at large. The committee bargains for all member unions, establishes a uniform wage rate, and represents labor on the Joint Apprenticeship Committee. Separate from the bricklayers and their organizations are other specialized locals for tile setters; mosaic and terrazzo workers; marble and stone masons; and pointers, cleaners, and caulkers ("tuck pointers"). Each of these unions has its own contract and apprenticeship program, except the tile setters, who work their way up from the helper category.[1]

The mixed locals in other cities have discrete membership classifications for brick masons, stone masons, tile setters, and so on, but unlike the other unions, the bricklayers have no category for broadly trained mechanics who may work at any phase of the trade. Instead, each member must qualify separately for membership in each classification in which he wishes to work.

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[1]Interview with New York City Bricklayers' union official.

Entry through Nonapprenticeship Routes

The process for qualifying for bricklayers' union membership as a journeyman is not complicated, as can be seen in table 6. Virtually the only requirements for attaining journeyman status in masonry crafts are (1) getting two journeymen to vouch for the candidate's ability as a journeyman, and (2) the payment of an initiation fee of about $200. Four locals require the candidate to obtain his two vouchers by demonstrating his skill on the job. The process of obtaining vouchers must be followed each time a man wishes to qualify in a new specialty; however, he pays only one initiation fee. The voucher system is not widely used outside the bricklayers' union; as will be shown, tests for prospective journeymen have largely superseded vouchers in other unions.

Entry through Apprenticeship

The apprenticeship system has traditionally been an important source of training in the masonry trades; however, in recent years its importance has diminished. Mills estimates that between 1958 and 1967 the number of registered bricklayer apprentices fell from 15,000 to 9,000, or some 40 percent, with slight increases since 1967.[2] In Jackson, the bricklayers have had no apprentices since 1966, but the apprenticeship program was re-instigated in the summer of 1972. In New York, the apprenticeship program has been moribund for several years due to lack of funds.[3] There are similar difficulties in the San Francisco local, where related classroom training was not offered during the 1950's and whose apprentices in the northern part of the State still receive no related training. At least part of the explanation for the decline in masonry apprentices is decreased demand for bricklayers caused by the substitution of new construction materials for brick.

The maximum age for first-year bricklayer apprentices is 24 to 28, except in New York and Austin, where the maximum age is 21 (see table 7). As is customary in the building trades, exceptions are made for apprentices who have served in the Armed Forces. Typically, the maximum age is raised 1 year for each year spent in the military.

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[2]Mills, Industrial Relations and Manpower in Construction (Cambridge, Mass.: M.I.T. Press, 1972), p. 230.

[3]Interview on June 26, 1971, in New York with Eddie Johnson, director, New York Workers Defense League Joint Apprenticeship Program.

TABLE 6. REQUIREMENTS FOR ENTRY INTO BRICKLAYERS' UNIONS THROUGH NONAPPRENTICESHIP ROUTES: 1971-72

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
Bricklayers Local 8 (Atlanta); 800	--	--	"apprentice improver" status (for those who cannot qualify at first)	--	2	--	$200 ($180 for apprentice improver)
Bricklayers Local 8 (Austin); 200	--	--	--	--	2	--	$200
Bricklayers Executive Committee (N.Y.); about 6,500	--	--	--	--	2	--	varies from local to local
Bricklayers Local 7 (Houston); 800	--	--	--	--	2	--	$227.50
Bricklayers Local 55 (Columbus); 550	--	4 (Unwritten rule)	--	practical; over trade, on job site	2	--	$162.75
Bricklayers Local 15 (Jackson); 100	--	--	--	--	2	--	$125
Bricklayers Local 21 (Chicago); 4,000	--	--	--	practical; over trade, on job site	2	--	$200
Bricklayers Local 7 (San Francisco); 290	--	--	--	practical; over trade, on job site	2	--	$209.25
Bricklayers Local 8 (Oakland); 415	--	--	--	practical; over trade, on job site	2	--	$270

SOURCE: Interviews with bricklayers' union business agents.

TABLE 7. REQUIREMENTS FOR ENTRY INTO BRICKLAYERS' UNIONS THROUGH APPRENTICESHIP PROGRAMS: 1971-72

Local unions	Requirements for Indenture				
	Age range	Formal education	Type of test	Interview	Fee
Bricklayers Local 8 (Atlanta)	17 to 24 (27 for ex-servicemen)	high school (may be waived)	7th-8th grade math	4 journeymen (business agent and others, elected)	$35 paid at end of 12-week class
Bricklayers Local 8 (Austin)	16 to 21 (24 for ex-servicemen)	high school diploma or GED	--	JAC	--
Bricklayers Executive Committee (New York)	17 to 21 (24 for ex-servicemen)	must be hired by contractor in advance			50% to 60% of journeyman fee
Bricklayers Local 7 (Houston)	17 to 28 plus time in military service	high school diploma or GED	--	JAC	$28.50
Bricklayers Local 55 (Columbus)	18 to 25 (27 for ex-servicemen)	high school diploma	GATB (aptitude)	JAC	$5.75
Bricklayers Local 15 (Jackson)	18 to 25 (30 for ex-servicemen)	high school diploma or GED	aptitude	JAC	$45
Bricklayers Local 21 (Chicago)	17 to 25 plus time in military service	2 years high school	aptitude; physical exam	JAC	$160
Bricklayers Local 7 (San Francisco)	18 to 25	high school diploma or GED	--	JAC	$105 (1/2 of journeyman fee)
Bricklayers Local 8 (Oakland)	17 to 21	high school diploma	--	JAC	$135 (1/2 of journeyman fee)

TABLE 7 (Continued)
Requirements for Journeyman Status

Local unions	Duration of program	Tests	Interview	Vote of membership	Number of vouchers required	Fee
Bricklayers Local 8 (Atlanta)	3 years including 12-week preapprenticeship; only for brick and stone masons	--	--	--	2	$65 (total membership fees of $100)
Bricklayers Local 8 (Austin)	3 years	no final exam	--	--	2	$100 (= total membership fee)
Bricklayers Executive Committee (New York)	4 years	--	--	--	2	none at completion of program (total membership fee = 50% to 60% of journeyman fee)
Bricklayers Local 7 (Houston)	3 to 4 years	at intervals	--	--	--	$100 (total membership fees of $128.50)
Bricklayers Local 55 (Columbus)	4 years	no final exam	--	--	2	none at completion of program (total membership fee=$5.75)
Bricklayers Local 15 (Jackson)	3 years	--	--	--	2	$80 (total membership fees of $125)
Bricklayers Local 21 (Chicago)	3 years (12-week preapprenticeship)	--	--	--	2	none at completion of program (total membership fee=$160)
Bricklayers Local 7 (San Francisco)	4 years	--	--	--	--	$104 (total membership fees of $270)
Bricklayers Local 8 (Oakland)	4 years (up to 3 years credit for prior experience)	quarterly; no comprehensive final exam	--	--	2	$135 (total membership fees of $270)

SOURCE: Interviews with bricklayers' union business agents.

Most programs require high school diplomas or the equivalent (GED). About half require the passage of an aptitude test (usually the GATB, administered by State employment services). Most applicants are interviewed by the JAC prior to acceptance. Initiation fees are low: in our study cities, the only fees that exceeded $50 were the $160 in Chicago, $135 in Oakland, and $105 in San Francisco.

Bricklayers' apprenticeship programs are 3 to 4 years long and provide training only in brick and stone masonry and cinder block work. In the mixed locals, men in other classifications become journeymen after working as helpers for several years. Less emphasis is placed on related classroom training than on manual work at the job site; there are few tests and no comprehensive final examinations (which are common in other trades). Each apprentice must secure two vouchers when he "turns out," or graduates, from the apprenticeship program. Most locals charge fees at the end of the program, but in only three of our study cases (Jackson, San Francisco, and Oakland) were the two fees paid by apprentices as much as the fee paid by journeymen who enter without serving apprenticeships.

Transfers From Other Locals

The process of transferring from one bricklayers' local to another is uncomplicated (see table 8). In fact, a journeyman member in good standing may transfer to another local automatically, subject to a nominal fee. A San Francisco Bay Area business agent expressed his local's policy thus: "When the market is good, we accept anyone with an international card -- either as transfers or as permit workers -- whichever way they want to have it."[4] The only exception to this pattern was found in New York, where transfers among locals represented by the Bricklayers Executive Committee were discouraged for administrative purposes. There is valid reason for this: shifts in the location of contracts might lead to constant and unnecessary movement of members among the locals, causing much superfluous paper shuffling and financial troubles but providing no flexibility that does not already exist under the permit system.

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[4]Interview with San Francisco Bay Area Bricklayers' union official.

TABLE 8. REQUIREMENTS FOR TRANSFER INTO BRICKLAYERS' UNIONS FROM OTHER BRICKLAYERS' LOCALS: 1971-72

Local unions	Interview	Years of experience required	Probationary period required	Test	Number of vouchers required	Vote of membership	Fee
Bricklayers Local 8 (Atlanta)	--	--	--	--	--	--	$10
Bricklayers Local 8 (Austin)	--	--	--	--	--	--	$15 if transferring from out of State
Bricklayers Executive Committee (New York)	--	Must get local secretaries to agree to a transfer between 2 New York City locals					must pay difference in initiation fees if a member less than 1 year
Bricklayers Local 7 (Houston)	--	-- (transfer automatic for members in good standing)	--	--	--	--	$2 death benefits
Bricklayers Local 55 (Columbus)	--	-- (transfer automatic for members in good standing)	--	--	--	--	1 month's dues
Bricklayers Local 15 (Jackson)	--	-- (transfer automatic for members in good standing)	--	--	--	--	$25 if transferring from out of State
Bricklayers Local 21 (Chicago)	--	-- (transfer automatic for members in good standing)	--	--	--	--	--
Bricklayers Local 7 (San Francisco)	--	-- (transfer automatic for members in good standing)	--	--	--	--	--
Bricklayers Local 8 (Oakland)	--	-- (transfer automatic for members in good standing)	--	--	--	--	must pay difference in initiation fees if a journeyman less than 6 months

SOURCE: Interviews with bricklayers' union business agents.

The Permit System

Temporary permits are issued to traveling members from other bricklayer locals and to men who have qualified as journeymen but have not finished paying their initiation fees (see table 9). Travelers may typically work in a local's jurisdiction as long as there are more jobs than the local can fill from its own membership. In New York, the Bricklayers Executive Committee allows men from member locals to claim work which cannot be manned by other locals, a provision which renders extensive transferring among member locals unnecessary.

Carpenters

The jurisdiction of the carpenters' unions in this study includes principally commercial and industrial construction, with some highway and heavy work as well. In Atlanta, however, a residential local is organizing part of the single-family and low-rise apartment building industry. Most of the other local unions are mixed commercial and industrial locals, whose members do everything from framing, dry wall construction, and building simple concrete forms to complex form building and finish work, including cabinetmaking and interior trim work. Other fields include hanging acoustical ceilings, floor covering, pile driving, and dock building.

Atlanta, Jackson, Austin, and Columbus each have only one commercial carpenters' union; these are all mixed locals. In New York, Houston, Chicago, and the Bay Area there are Carpenters District Councils, which are similar in form and aims to the Bricklayers Executive Committee in New York. A council handles all bargaining, establishes a uniform rate for almost all trades in the area, and represents all area unions on joint apprenticeship committees. For example, the Carpenters District Council in New York includes nearly 40 mixed locals for millwrights, dock builders, timbermen, floor coverers, and resilient floor coverers. The specialty locals have craft jurisdiction for the entire city, while the mixed locals divide the area on a geographical basis. Similar arrangements prevail in the other large cities.

Except in the specialty locals, there is only one journeyman classification -- journeyman carpenter -- regardless of the individual member's specialty or the extent of his skills. Thus, a well trained mechanic carries the same book as a man who knows only form building or dry wall construction. Although this system is much less rigid and formal than that of the

TABLE 9. REQUIREMENTS FOR WORK UNDER BRICKLAYERS' UNIONS THROUGH NONAPPRENTICESHIP ROUTES (PERMIT SYSTEM): 1971-72

Local unions	Workers eligible for permits	Test	Permits issued at business agent's discretion	Fee	Length of time a nonmember may work on permit
Bricklayers Local 8 (Atlanta)	traveling members only	--	yes	local dues	unlimited
Bricklayers Local 8 (Austin)	travelers; initiation fee paid in installments	--	yes	$3 per month (same as local dues)	unlimited
Bricklayers Executive Committee (New York)	travelers; anyone making payments on his card	--	yes, except to members of other Executive Committee locals	local dues	unlimited
Bricklayers Local 7 (Houston)	travelers	--	yes	$4 per month (=local dues)	unlimited
Bricklayers Local 55 (Columbus)	travelers	--	yes	local dues	--
Bricklayers Local 15 (Jackson)	travelers; those trying to qualify for new categories	--	yes	local dues	6 weeks (until vouchers are obtained)
Bricklayers Local 21 (Chicago)	travelers	--	at least half of workers on any job must be from local	local dues	unlimited
Bricklayers Local 7 (San Francisco)	travelers	--	yes	local dues	unlimited
Bricklayers Local 8 (Oakland)	travelers	--	yes	local dues (only for travelers from out of State)	unlimited

SOURCE: Interviews with bricklayers' union business agents.

bricklayers, it complicates the duties of the business agent, who must remember the kinds of jobs to which a member may be referred. For this reason, many business agents are enthusiastic supporters of the apprenticeship system, because they feel that an apprenticeship graduate is probably able to do any work he is assigned. Although many informally trained carpenters are thoroughly qualified, numerous others are trained to do only one or a few tasks and can be referred only to jobs requiring their particular skills.

Entry Through Nonapprenticeship Routes

The qualifications for direct admission to the carpenters' unions are summarized in table 10. Each union requires either the passage of a test over the worker's knowledge of the trade or specialty or an interview with a union officer or a committee of union members (two unions require both a test and an interview). These interviews often serve as oral examinations and as the means by which union officers learn about the applicant's background, the kind of work he has done, contractors he has worked for, etc. Some unions require one or two vouchers, and all require an initiation fee of up to $250.

Entry Through Apprenticeship

The maximum age for first-year carpenter apprentices is 27 to 28, except for veterans, whose maximum age is raised 1 year for each year spent in the military (see table 11). Although most programs do not require a high school diploma or the equivalent, most require the passage of an aptitude test. Most of these tests are given by State employment services or private testing agencies, but the locals in Columbus and Austin use a test constructed by the international union. (Since 1967, Austin carpenters have given this test to applicants but have not used the results to determine acceptance into the program. Hence, there should be a wide dispersion of test scores among men who have been trained in the program. It should be possible to correlate their scores with their performances as apprentices to determine whether these tests are valid in the language of the recent Griggs decision.[5]) Each applicant is interviewed

[5] Griggs vs. Duke Power Company, 401 U.S. 424, 91 S. Ct. 849 (1971). In a decision unrelated to apprenticeship selection standards, the court ordered the company to end a seemingly neutral seniority system which had the effect of excluding blacks from promotion. With the Griggs decision as precedent, other courts may strike down most tests currently in use by unions and employers, unless they can be shown to be accurate predictors of future job performance, because they screen out minorities in greater proportions than whites.

TABLE 10. REQUIREMENTS FOR ENTRY INTO CARPENTERS' UNIONS THROUGH NONAPPRENTICESHIP ROUTES: 1971-72

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
Carpenters Local 225 (Atlanta); commercial, 2,500	--	--	--	written; over the trade or specialty; "nobody fails," according to the business agent	2	yes (pro forma)	$198.10
Carpenters Local 2358 (Atlanta); residential, 400	informal; with business agent, apprenticeship coordinator, or representative of the international	--	--	--	--	--	$15
Carpenters Local 1266 (Austin); 1,000	business agent	--	--	--	2	--	$170
Carpenters District Council (N.Y.); about 22,000 (in construction)	with elected examining committee or financial secretary; usually doubles as an oral examination over a specialty	each local has a 3-man examining committee to evaluate prospective members; admission practices vary among locals					$200
Carpenters District Council (Houston); 6,300	with an officer of the District Council	4	--	--	often recommended by contractor or foreman	--	$200
Carpenters Local 200 (Columbus); 1,800	with 3 journeymen appointed by the president of the local	4	2 years in residence	on job; over specialty	1	--	$150
Carpenters Local 1471 (Jackson); 500	with elected executive committee	--	--	--	often sponsored by a friend	yes	$150
Carpenters District Council (Chicago); 35,000	3 journeymen	4	--	oral; over trade; with council's examining board	--	--	$250
Carpenters District Council-Bay Area (S.F. and Oakland)	with district officers council	3 to 4	--	written and oral; over trade; given by examining board	2	yes	$50

SOURCE: Interviews with carpenters' union business agents.

TABLE 11. REQUIREMENTS FOR ENTRY INTO CARPENTERS' UNIONS THROUGH APPRENTICESHIP PROGRAMS: 1971-72

Requirements for Indenture

Local unions	Age range	Formal education	Type of test	Interview	Fee
Carpenters Local 225 (Atlanta) (commercial)	17 to 27 (32 for ex-servicemen)	high school diploma or GED	Georgia State Employment Service aptitude test for carpenters	JAC	$58.1
Carpenters Local 2358 (Atlanta) (residential)	apprenticeship applicants come from local Job Corps center; Job Corps currently does all testing and screening for apprenticeship applicants				
Carpenters Local 1266 (Austin)	17 to 28 (32 for ex-servicemen)	8th grade	aptitude test; grade is not used in selection	business agent	20% to 8 journey
Carpenters District Council (New York)	17 to 27 (32 for ex-servicemen)	1 year high school and grade average of 60	aptitude test (given by New York University) and physical exam	with apprenticeship director (to inform the applicant about what is expected)	20% to 8 $200 jo man fee
Carpenters District Council (Houston)	17 to 27 (32 for ex-servicemen)	10th grade or	test over 10th-grade math	with an instructor	1st year: 2nd year 3rd year: 4th year: (veteran only $
Carpenters Local 200 (Columbus)	18 to 27 (32 for ex-servicemen)	high school diploma or GED	aptitude (international test)	JAC	20% of jo man fee year ap
Carpenters Local 1471 (Jackson)	17 to 27 (32 for ex-servicemen)	8th grade	aptitude (employment service)	JAC	20% to 8 journey
Carpenters District Council (Chicago)	17 to 28 (32 for ex-servicemen) U.S. citizen	2 years high school	aptitude; physical	1 contractor, 1 union representative, apprenticeship coordinator	20% to 8 $200 jo man fee
Carpenters District Council (Bay Area)	17 to 27 (up to 32 for ex-servicemen)	high school diploma, GED, or completion of Job Corps	aptitude (international test); must score 70 if has no high school diploma or GED	JAC	$40

TABLE 11 (CONTINUED)

Requirements for Journeyman Status

Local unions	Duration of program	Tests	Interview	Vote of membership	Number of vouchers required	Fee
Carpenters Local 225 (Atlanta) (commercial)	4 years (provision for past experience)	every 6 months; no comprehensive final exam	--	--	--	none at completion of program (total membership fee= $58.10)
Carpenters Local 2358 (Atlanta) (residential)	4 years (provision for past experience)	--	--	--	--	none
Carpenters Local 1266 (Austin)	4 years (up to 3 years for prior experience)	every 6 months	--	--	--	none at completion of program (total membership fee=20% to 80% of $170)
Carpenters District Council (New York)	4 years (may serve as little as 1 year)	at intervals	--	--	--	none at completion of program (total membership fee=20% to 80% of $200)
Carpenters District Council (Houston)	4 years	at intervals	--	--	--	none at completion of program (total membership fee=$75 to $195)
Carpenters Local 200 (Columbus)	4 years (credit for experience rarely given)	frequent	--	--	--	20% each year; 20% on completion (total membership fee=$150)
Carpenters Local 1471 (Jackson)	4 years	at intervals; comprehensive final exam	--	--	--	none at completion of program (total membership fee=20% to 80% of journeyman fee)
Carpenters District Council (Chicago)	4 years	every 3 months; comprehensive written final exam	--	--	--	none at completion of program (total membership fee = 20% to 80% of $200)
Carpenters District Council (Bay Area)	4 years (up to 1/2 year credit for prior experience)	must pass 8-9 units; individually administered	--	--	--	none at completion of program (total membership fees = $40)

SOURCE: Interviews with carpenters' union business agents.

by the joint apprenticeship committee (JAC) or by a union official, except in Local 2358 in Atlanta, where apprentices are taken from the graduates of a nearby Job Corps center and are screened by Job Corps personnel.

The apprenticeship programs are 4 years in length, with advanced placement often given to apprentices with experience in the trade. In fact, apprentice initiation fees vary according to the apprentice's standing when indentured. Frequently first-year apprentices pay 20 percent of the journeyman fee; apprentices joining in the second year of the program pay 40 percent; third-year apprentices pay 60 percent; and fourth-year apprentices pay 80 percent. Most locals charge no additional fee when the apprentice "turns out." Only the program in Chicago requires a comprehensive examination at the end of the fourth year, but all give tests at intervals during the program.

Transfers from Other Locals

As indicated in table 12, the only requirements for transferring from one carpenters' local to another are membership in good standing of the home local and, in some cases, payment of any difference between the initiation fee charged by the home local and the one into which a member is transferring. Otherwise, as with the bricklayers, a journeyman's book is proof of competence; as one business agent put it, "If he's a carpenter in Nashville, he's a carpenter in Atlanta."[6]

The Permit System

Traveling members of other carpenters' locals may work on temporary permits as long as work is available. In several cities, incoming journeymen making regular payments toward initiation fees also are considered to be permit men. Some unions allow students and sons or nephews of members of contractors to work on permits during the summer, which is usually the busiest season. Travelers are charged the equivalent of local dues (see table 13).

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[6]Interview with Atlanta Carpenters' union official.

TABLE 12. REQUIREMENTS FOR TRANSFER INTO CARPENTERS' UNIONS FROM OTHER CARPENTERS' LOCALS: 1971-72

Local unions	Interview	Years of experience required	Probationary period required	Test	Number of vouchers required	Vote of membership	Fee
Carpenters Local 225 (Atlanta) (commercial)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 225
Carpenters Local 2358 (Atlanta) (residential)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 2358
Carpenters Local 1266 (Austin)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 1266, if card is less than 2 years old
Carpenters District Council (New York)			members not from district council may usually transfer after working on permit	members of locals within the council are not allowed to transfer within the council			
Carpenters District Council (Houston)	--	--	--	--	--	--	--
		(transfer automatic for members in good standing)					
Carpenters Local 200 (Columbus)	--	--	--	--	--	--	--
		(transfer automatic for members in good standing)					
Carpenters Local 1471 (Jackson)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 1471, if book is less than 2 years old
Carpenters District Council (Chicago)	--	--	--	--	--	--	1 month local dues
Carpenters District Council (Bay Area)	with local president in some locals	--	--	--	--	--	must pay difference in initiation fees between home local and Bay Area District Council, if a member less than 2 years

SOURCE: Interviews with carpenters' union business agents.

TABLE 13. REQUIREMENTS FOR WORK UNDER CARPENTERS' UNIONS' PERMIT SYSTEM: 1971-72

Local unions	Workers eligible for permits	Test	Permits issued at business agent's discretion	Fee	Length of time a nonmember may work on permit
Carpenters Local 225 (Atlanta) (commercial)	traveling members only	--	yes, except for "key personnel"	local dues ($11 per month)	unlimited
Carpenters Local 2358 (Atlanta) (residential)	traveling members; high school and college students in summer	--	yes	local dues ($9 per month)	temporary for union; summer for boys
Carpenters Local 1266 (Austin)	anyone; nonmembers must make payments on union books	--	yes	nonmembers pay $50 plus $5 per day worked up to $170-initiation fee; travelers pay "foreign dues" (same as local dues)	up to 6 months (usually 30 working days) for nonmembers; unlimited for travelers
Carpenters District Council (New York)	anyone, up to 7 days; then must join union	--	no more than 50% of men on a job can be on permits (verbal agreement)	approximately $3 per month	unlimited for travelers
Carpenters District Council (Houston)	travelers	--	yes	local dues	unlimited
Carpenters Local 200 (Columbus)	travelers; sons and relatives of contractors	--	yes	--	unlimited
Carpenters Local 1471 (Jackson)	travelers, mostly	--	yes	"foreign dues" (=local dues)	unlimited
Carpenters District Council (Chicago)	travelers; college boys in summer	--	yes	local dues	unlimited
Carpenters District Council (Bay Area)	travelers; in some locals, nonmembers interested in joining the union	--	yes	local dues ($13 per month)	unlimited

SOURCE: Interviews with carpenters' union business agents.

Electricians (IBEW)

Of all of the construction trades, the electricians' is one of the most highly technical and mentally exacting. The heart of the IBEW unions' jurisdiction is the prestigious commercial and industrial wiring field, including the wiring of electrical motors, controls, and instruments. In the larger cities, IBEW locals also control (to varying degrees) residential wiring and commercial and industrial electrical maintenance, although the latter categories are not as demanding or as highly paid as the new construction branch.

Unlike many of the unions under study, IBEW construction locals are mixed locals; they are not organized along specialty lines, even in large cities, although the construction locals are commonly separated from utility or manufacturing locals. An exception is Local 3 in New York, which includes practically all electricians in utilities and manufacturing as well as construction. The Bay Area locals have separate categories for workers in the shipbuilding industry, although these divisions are declining in importance as that industry moves out of the area.

Apprenticeship has been an established institution in the IBEW for decades, and the quality of training offered in electrical apprenticeship programs is excellent. Further, electrical work is one of the few crafts in which apprenticeship is the source of training for a majority of the members in the construction branch of the international union.[7]

Entry through Nonapprenticeship Routes

Direct admission to journeyman status in IBEW locals is very complicated. Several union officials indicated that the majority of journeymen who had not served apprenticeships became members when the union organized open shops. Generally speaking, the entry standards are not as demanding for those who enter via the organization route as for those who enter from "off the street." In fact, in New York and Columbus, journeymen are admitted only through organization. These standards are summarized in table 14.

A mechanic who applies on his own for status as a journeyman inside wireman (JIW) is interviewed by the executive board or, in Chicago, by the seniority system administrator. Several

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[7] Mills, Industrial Relations and Manpower in Construction, p. 213.

TABLE 14. REQUIREMENTS FOR ENTRY INTO IBEW UNIONS THROUGH NONAPPRENTICESHIP ROUTES: 1971-72

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
IBEW Local 613 (Atlanta); 1,000	7-man executive board; over background, work experience	4 for non-members; (2 years in "D" category if unable to pass journeyman test) or 4 years in residential	--	written; over trade; easier than apprenticeship final, 70 is passing; different for "A," "D," "R," examination board of 5 elected members	--	yes	$150
IBEW Local 520 (Austin); 400	two, by 7-man elected executive board; written recommendation from foreman and workers; recommends only acceptance or rejection	4 (if an "R" wireman, must stay in residential at least 3 years)	6 months	written; over trade; 70 is passing; man is out by examining board of 3 elected members; taken after serving probation	--	yes (not for residential)	$100 for JIW $30 for residential
IBEW Local 3 (New York); about 11,000 in construction	by 9-man executive board (president, vice-president, recording secretary, business manager, 5 elected members)	usually taken in via organization of open shops; can advance from maintenance category by passing test (after 3 years in "M")	--	written; over trade; 3-man elected examining board; can be over a specialty	--	--	$300
IBEW Local 716 (Houston); 1,600 in construction	with executive board	4 (plus city license) or 2 years in "D" category, or 5 years in residential	--	written; over trade; 5-man local examining board; 75 is passing	--	yes	$100
IBEW Local 683 (Columbus); 825	with business agent--first step; do not accept people off street--only through organization	1 on permit (or referral by contractor) or 5 years in residential	2-week class in basic electricity	over trade; by examining board	by contractor	yes	$150
IBEW Local 480 (Jackson); about 230	--	4	--	written; over code; easier than apprenticeship final	--	--	--
IBEW Local 134 (Chicago); 8,000 in building trades branch	with administrator of seniority system	2 years with one contractor or 3 years with more than one; must be *continuous* service	--	written; over trade; examination board	--	by Executive Board	$350
IBEW Local 6 (San Francisco); 1,500	inside wiremen committee (5 men, elected)	1	30 days	written; over trade and codes; examining board; 70 is passing ("D" wiremen must take journeyman training courses before taking exam)	--	yes (vote on Executive Board recommendation)	--
IBEW Local 595 (Oakland); 1,000	--	1 (proof from contractor)	--	written; over trade, codes everyday math; 5-man elected examining board	--	yes (vote on Executive Board recommendation)	$50
IBEW Local 302[1] (Contra Costa County); 580				required of journeymen in other categories who want to become JIW's		yes	

[1]No official standards other than vote of membership; no one has been admitted this way in recent years.

SOURCE: Interviews with IBEW union business agents.

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locals require at least 4 years' experience in the trade before giving the journeyman examination constructed by the elected local examining board testing the mechanic's knowledge of the trade; a grade of 70, or 75 percent, is usually the minimum passing score. An affirmative vote by the membership is required in the smaller locals. Initiation fees vary from $100 to $350.

The Atlanta, Houston, and San Francisco locals have membership categories (called "D" wiremen) for those who fail to pass the journeyman examination. These men are allowed to do journeyman work at the journeyman rate for a period of 2 years while attending upgrading classes in basic electricity. After 2 years, they are eligible to retake the JIW examination. In theory, men are required to serve 2 years in the "D" category only if they cannot pass the JIW exam, but a Houston foreman said that, in practice, the union requires most applicants to serve in the "D" category before taking the exam the first time.

The residential category is growing in importance in many locals. Normally, entrance to the residential branch is much easier and less expensive than to the inside branch of the trade, since residential work is less demanding and lower paying. However, once a worker enters the residential category, he must remain there for 3 to 5 years before being considered for membership in the inside branch (the same is true for members of the maintenance branches in Houston and New York).

The highest standards for membership are those of Local 134 in Chicago. To become a JIW in that local, a man must accumulate 4,000 hours' experience if he works for only one contractor during his probation, or 6,000 hours if he works for more than one contractor. After the probationary period, the applicant may take the journeyman examination; if he passes, the initiation fee is $350 (the highest among the IBEW locals under study).

Entry Through Apprenticeship

Admission standards for apprentices, shown in table 15, are consistently high for all of the programs studied. The maximum apprenticeable age is 26 (in Columbus); all programs raise their maximum ages for ex-servicemen. All programs require a high school diploma or GED, and several expect a minimum background in high school mathematics. All programs give aptitude tests or batteries of tests, and all applicants are interviewed by the JAC. The widest dispersion of standards is for initiation fees, which range from zero in Oakland to $300 in New York.

TABLE 15. REQUIREMENTS FOR ENTRY INTO IBEW UNIONS THROUGH APPRENTICESHIP PROGRAMS: 1971-72

Requirements for Indenture

Local unions	Age range	Formal education	Type of test	Interview	Fee
IBEW Local 613 (Atlanta)	18 to 24 (28 for ex-servicemen)	high school diploma or GED	Georgia State Employment Service aptitude, JAC math test; total score is counted	JAC	10% of journeyman fee on application; 40% of journeyman fee on indenture
IBEW Local 520 (Austin)	18 to 24 (28 for ex-servicemen)	high school diploma	Texas Employment Commission aptitude test; must achieve a "qualifying score" on each of the 4 sections of the test	JAC	$25
IBEW Local 3 (New York)	18 to 21 (25 for ex-servicemen)	high school diploma or GED	aptitude, math, English (administered by State); essay on why candidate wants to be an electrician	JAC	$300
IBEW Local 716 (Houston)					
1) construction	18 to 25 (plus time in military service)	high school diploma or GED; 2 years algebra	Texas Employment Commission aptitude test	JAC	$50 after 1 year probation
2) residential	--	--	aptitude	JAC	$10 after 1 year
3) maintenance	--	--	aptitude	JAC	$3 after 1 year
IBEW Local 683 (Columbus)	18 to 26 (30 for ex-servicemen); 1 year residence in the area	high school diploma; 1 year algebra	GATB	JAC	$155 (paid over 1st year)
IBEW Local 480 (Jackson)	18-24 (plus up to 4 years in military)	high school diploma; 1 year algebra	aptitude; State employment service	JAC	$52
IBEW Local 134 (Chicago)	17 to 25 (plus time in military service)	high school diploma or GED	aptitude	JAC (attitude important)	$150 after 1st year
IBEW Local 6 (San Francisco)	18 to 23 (plus up to 2 years in military)	high school diploma or GED; high school math grades must be average	algebra, mechanical ability, reading comprehension, vocational interests	JAC (after exam is passed)	$51 after 6 months
IBEW Local 595 (Oakland)	18 to 23 (plus up to 4 years in military)	high school diploma or GED; 1 semester algebra with C or better	3 tests: 1) School or College Ability test (2 parts) 2) Minnesota Paper Form Board Test 3) Benet Mechanical Comprehension Test	JAC	none
IBEW Local 102 (Contra Costa)	18 to 23 (plus time in military service or related training)	high school diploma or GED; passing grade in algebra	GATB (= 75% of entrance score); a math test is given but not counted	JAC (= 25% of entrance score)	$52 after 7 months

TABLE 15 (CONTINUED)

Requirements for Journeyman Status

Local unions	Duration of program	Tests	Interview	Vote of membership	Number of vouchers required	Fee
IBEW Local 613 (Atlanta)	4 years (up to 1 year off for experience)	every 6 months; comprehensive final exam	--	--	--	50% on acceptance as journeyman (total membership fees of $150)
IBEW Local 520 (Austin)	4 years	every 6 months; city licensing exam at end of program	--	--	--	$75 (total membership fees of $100)
IBEW Local 3 (New York)	4 years plus 1 year as MIJ wireman (time off in a few organizing cases)	yearly; comprehensive exam after 4th and after MIJ year	--	--	--	none at completion
IBEW Local 716 (Houston)						
1) construction	4 years	comprehensive final (written and practical)	--	--	--	$50 (total membership fees of $100)
2) residential	2 years	written and practical final	--	--	--	$15 (total membership fees of $25)
3) maintenance	2 years	written and practical final	--	--	--	$12 (total membership fees of $15)
IBEW Local 683 (Columbus)	4 years	final same as journeyman test	--	--	--	none at completion of program (total membership fees of $155)
IBEW Local 480 (Jackson)	4 years	comprehensive final; harder than journeyman test	--	--	--	$50 (total membership fees of $102)
IBEW Local 134 (Chicago)	4 years	quarterly; no final	--	--	--	$200 (total membership fees of $350)
IBEW Local 6 (San Francisco)	4 years	every 6 months; comprehensive written final	--	--	--	$51 (total membership fees of $102)
IBEW Local 595 (Oakland)	4 years (credit seldom given)	annual final exam	--	--	--	$50 total membership fee
IBEW Local 302 (Contra Costa)	4 years (credit seldom given)	each semester; final	--	--	--	$50 (total membership fees of $102)

SOURCE: Interviews with IBEW union business agents.

Apprenticeship programs are 4 years long, with credit seldom given for prior experience in the trade. Most programs give annual or semi-annual tests as well as comprehensive final examinations, although, according to the director of the National Joint Apprenticeship and Training Committee for the Electrical Industry, the trend in electricians' apprenticeship programs is away from these types of tests. When the apprentices "turn out," they pay fees which, when added to the fees paid at the time of indenture, are equal to journeyman initiation fees.

The only exception to these patterns is in Houston, where IBEW Local 716 offers 2-year programs for the residential and maintenance branches; their entry standards and fees are much lower than for inside construction.

Transfers from Other Locals

The IBEW differs from most unions in that its locals seem to discourage inter-local transfers. Table 16 shows an irregular array of requirements imposed on members who wish to change their local union membership. The local's attitudes toward accepting transfers are summed up by an IBEW official in Columbus, who said that his members felt threatened by transfers from locals (sometimes called "book mills") whose officers sell memberships to unqualified men who understand that they are to transfer out of the issuing locals.[8] This threat -- realistic or not -- reinforces the members' desire to prevent transfers, which reduce work opportunities in slack periods and dilute the locals' internal power structure.

The Permit System

Table 17 indicates some of the features of the permit system used by IBEW locals. However, the permit system is only a part of the referral procedure designed by the international union and used by most of the locals in this study. This system, with some allowance for variances in nomenclature, groups journeymen in four "books." Book 1 is for those who have worked 4 years in the trade, have passed the local's journeyman test, have worked at least 1 year (2 years in San Francisco) in the last 4 under the local's collective bargaining agreement, and live in the area. Book 2 journeymen have 4 years of experience and have passed a journeyman test. Book 3 is for craftsmen who have 2 years'

[8]Interview with IBEW official in Columbus, Ohio.

TABLE 16. REQUIREMENTS FOR TRANSFER INTO IBEW UNIONS FROM OTHER IBEW LOCALS: 1971-72

Local unions	Interview	Years of experience required	Probationary period required	Test	Number of vouchers required	Vote of membership	Fee
IBEW Local 613 (Atlanta)	--	--	2 years (variable)	for those who wish to change classification, e.g., from lineman to wireman	--	yes	must pay difference in initiation fees between home local and Local 613, if card is less than 5 years old
IBEW Local 520 (Austin)	--	4	1 month	--	--	yes	must pay difference in initiation fees between home local and Local 520, if card is less than 2 years old
IBEW Local 3 (New York)	--	--	--	--	--	seldom done	must pay difference in initiation fees between home local and Local 3, if a member less than 5 years
IBEW Local 716 (Houston)	--	--	--	if a member less than 5 years	--	--	must pay difference in initiation fees between home local and Local 716, if a member less than 5 years
IBEW Local 683 (Columbus)	"Just isn't done." -Business Agent. (Members fear transfers from "book mills," often in South)						
IBEW Local 480 (Jackson)	with executive board	--	no	--	--	yes	--
IBEW Local 134 (Chicago)	with executive board	--	must establish residence in the area	--	--	--	--
IBEW Local 6 (San Francisco)	--	2	--	--	--	--	--
IBEW Local 595 (Oakland)	examining board	--	--	--	--	--	must pay difference in initiation fees between home local and Local 595, if a member less than 5 years
IBEW Local 302 (Contra Costa)	--	--	--	--	--	yes	--

SOURCE: Interviews with IBEW union business agents.

TABLE 17. REQUIREMENTS FOR WORK UNDER IBEW UNIONS' PERMIT SYSTEM: 1971-72

Local unions	Workers eligible for permits	Test	Permits issued at business agent's discretion	Fee	Length of time a nonmember may work on permit
IBEW Local 613 (Atlanta)	anyone	---	yes	---	unlimited
IBEW Local 520 (Austin)	anyone	---	yes	1.5% of gross earnings for travelers; no charge for nonmembers	unlimited
IBEW Local 3 (New York)	travelers; a few applying for membership	---	yes	---	unlimited
IBEW Local 716 (Houston)	travelers	---	yes	1.0% of gross earnings	unlimited
IBEW Local 683 (Columbus)	travelers				
IBEW Local 480 (Jackson)	travelers	---	yes	---	unlimited
IBEW Local 134 (Chicago)	travelers; people applying for journeyman status	---	number of referrals are made by seniority administrator	$8.50 per month (1 hour's wages)	unlimited
IBEW Local 6 (San Francisco)	anyone	---	yes	$13.80 per month ("working dues")	30 days; may be extended
IBEW Local 595 (Oakland)	travelers and nonmembers (Book V)	---	yes	$9.50 per month	unlimited
IBEW Local 302 (Contra Costa)	travelers	---	yes	1.25% of gross earnings	unlimited

SOURCE: Interviews with IBEW union business agents.

experience, have worked at least 6 months out of the last 3 years under the union's collective bargaining agreement, and live in the area. Book 4 is for men with at least a year's experience in the trade.

Even though union membership is technically not required for any of the above "books," in practice, Book 1 consists of the local's members, Book 2 includes travelers and recent transfers from other IBEW locals, and Books 3 and 4 usually include nonunion people. Thus, a union using this referral procedure can refer its own members to work first, then travelers, and finally nonmembers.

An exception to the four-book system occurs in Chicago, where the electrical industry has a seniority system, with an administrator and staff who make referrals on the basis of the worker's "seniority" in the trade. Since a journeyman obtains seniority only at the end of his probationary period (discussed earlier), a worker could be kept on permit for quite some time without ever having the opportunity to become an accredited union journeyman.

Ironworkers

The usual jurisdiction of the International Association of Bridge, Structural, and Ornamental Ironworkers is commercial and industrial construction, with very little residential work. All of the cities except New York and Chicago have mixed locals, with jurisdiction over structural, reinforcing, and ornamental ironwork as well as rigging, machinery moving, and stone derrick operation. In New York, however, there are separate locals for each of the above types of work on a specialty basis (except for reinforcing work, which is done by the metal lathers' union). The only two of these locals under study are the structural locals in Manhattan and the Bronx (Local 40) and on Long Island (Local 361). These two locals bargain jointly and have a common apprenticeship program. In Chicago, too, there are several specialized locals, only one of which (structural Local 1) was studied. Local 1 has its own apprenticeship program but is affiliated with the Ironworkers District Council for bargaining purposes.

The mixed locals in the other cities have one membership category -- journeyman ironworker -- for journeymen who are trained in all phases of the trade. Specialists are classified as "journeyman structural ironworker," "journeyman rigger," "journeyman ornamental ironworker," etc. As with bricklayers, ironworker specialists are permitted to work outside their specialties, although most are not anxious to do so. The classification by specialty craft is thus de facto rather than de jure.

Apprenticeship is not as well established in the ironworkers unions as in the mechanical trades. Most of the programs surveye have had related training only since the 1950's, and in Jackson, the program exists in name only. It is notable that each local union has a 3-year apprenticeship program, regardless of the scop of the local's jurisdiction. It is surprising that the mixed locals, whose programs attempt to teach the entire trade, do not have longer training periods than those offered by the specialty locals, which teach only part of the trade.

Entry through Nonapprenticeship Routes

Direct journeyman admission to the ironworkers is accomplish by a trade or specialty test, except (as noted in table 18) for Local 1 in Chicago, which did not admit journeymen directly or by transfer between 1967 and 1972. Most locals require an intervie with the business agent or executive committee before administeri the test. Normally this takes place after the applicant has serv a probationary period of from 6 months to 3 years while working o permit. The initiation fee, set by the international union, is $300.

Entry through Apprenticeship

The apprenticeable age range is usually 18 to 30 (see table Most ironworkers' programs require a high school diploma or a GED although the New York locals have dropped that requirement. Othe requirements are the passage of aptitude tests and interviews wit the JAC. The apprentice pays an initiation fee of $150 when he i indentured.

All of the programs give comprehensive final examinations after 3 years; the New York and Chicago locals give tests in addi tion to those given by the JAC. Except in New York, the apprenti pay an additional fee of $150 when they become journeymen.

Transfers from Other Locals

Although all of the unions except Local 1 in Chicago accept transfers, most union officials indicated that transferring is unusual. As shown in table 20, the most common requirement is an interview with the local union executive board, although a variet of other criteria also are used. However, the unions in Atlanta and Columbus indicated that members in good standing could transf at any time.

TABLE 18. REQUIREMENTS FOR ENTRY INTO IRONWORKERS UNIONS THROUGH NONAPPRENTICESHIP ROUTES: 1971-72

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
Ironworkers Local 387 (Atlanta); 900	examining committee appointed by president	--	--	written; over trade (specialty); made out by international, given by local examining committee	--	--	$300
Ironworkers Local 482 (Austin); 250	--	must be 21 years old	6 months (variable)	written; usually over a specialty; 70 is passing; examining board of president, secretary, 3 elected members; after probation	-- (two, until recently)	--	$300
Ironworkers Local 361 (New York); 750	by executive committee (after probation)	--	6 months on permit	oral or practical (3-man examining board)	--	--	$300
Ironworkers Local 40 (New York); 750	before test, after probation, by 5-man elected executive board	3	up to 2 years on permit	written and practical (3-man elected examining board); 70 is passing	--	yes	$300
Ironworkers Local 84 (Houston); 1,300	with business agent; work must be available before application is accepted	must be at least 30 years old	--	written; over trade or specialty; examining board; 70 is passing	-- (most are sponsored, however)	--	$300
Ironworkers Local 172 (Columbus); 650	--	"should have some experience"	--	"sometimes," in specialty areas	one from contractor	--	$300
Ironworkers Local 469 (Jackson); 500	with business agent	--	--	written; over trade or specialty; local examining committee	contractor recommendation is important	--	$300
Ironworkers Local 1 (Chicago)	--	(this method has not been used in the past 5 years)	6 months	over trade or specialty	(this method has not been used in the past 5 years)		$300
Ironworkers Local 377 (San Francisco)	(1)	(1)	(1)	(1)	(1)		(1)
Ironworkers Local 377 (Oakland)	(1)	(1)	(1)	(1)	(1)		(1)

[1] Information unavailable.

SOURCE: Interviews with ironworkers' union business agents.

TABLE 19. REQUIREMENTS FOR ENTRY INTO IRONWORKERS UNIONS THROUGH APPRENTICESHIP PROGRAMS: 1971-72

Requirements for Indenture

Local unions	Age range	Formal education	Type of test	Interview	Fee
Ironworkers Local 387 (Atlanta)	18 to 30	high school diploma or GED	aptitude test made out by international	JAC	$150
Ironworkers Local 482 (Austin)	18 to 30 (33 for ex-servicemen)	high school diploma "desirable"	---	JAC	$150
Ironworkers Locals 40 and 361 (New York)	18 to 28	10th grade	aptitude; physical performance test	JAC (may be eliminated soon)	$150
Ironworkers Local 84 (Houston)	18 to 30	high school diploma or GED	aptitude (TEC)	JAC	$150
Ironworkers Local 172 (Columbus)	18 to 30	high school diploma	aptitude (Science Research Associates)	JAC	$150
Ironworkers Local 469 (Jackson)	18 to 30	high school diploma or GED	aptitude	JAC	$150
		(No actual apprenticeship program at present)			
Ironworkers Local 1 (Chicago)	18 to 30	high school diploma or GED	aptitude	JAC (consider reference, experience, residence, military service)	$150 (after 8 weeks)
Ironworkers Local 377 (San Francisco)	18 to 30	high school diploma or GED	---	JAC	$150 (after 6 months' probation)
Ironworkers Local 378 (Oakland)	18 to 31	high school diploma or GED	none (used to require Science Research Associates)	JAC	$150 (after 6 months' probation)

TABLE 19 (CONTINUED)

Requirements for Journeyman Status

Local unions	Duration of program	Tests	Interview	Vote of membership	Number of vouchers required	Fee
Ironworkers Local 387 (Atlanta)	3 years (provision for past experience)	comprehensive final exam	--	--	--	$150 (total membership fees of $300)
Ironworkers Local 482 (Austin)	3 years (up to 6 months for prior experience)	every 3 months; comprehensive final exam	--	--	--	$150 (total membership fees of $300)
Ironworkers Locals 40 and 361 (New York)	3 years	two final exams; written (given by the school); practical (given by the local)	--	--	--	none at completion of program (total membership fees of $150)
Ironworkers Local 84 (Houston)	3 years	comprehensive final exam	--	--	--	$150 (total membership fees of $300)
Ironworkers Local 172 (Columbus)	3 years	comprehensive final exam	--	--	--	$150 (total membership fees of $300)
Ironworkers Local 469 (Jackson)	3 years	tests every 6 months; comprehensive final exam	--	--	--	$150 (total membership fees of $350)
Ironworkers Local 1 (Chicago)	3 years	two finals; one by JAC, one by local examining board	--	--	--	$150 (total membership fees of $300)
Ironworkers Local 377 (San Francisco)	4 years (credit for experience rare)	written final exam	--	--	--	$150 (total membership fees of $300)
Ironworkers Local 378 (Oakland)	3 years	written final exam	--	--	--	$150 (total membership fees of $300)

SOURCE: Interviews with ironworkers' union business agents.

TABLE 20. REQUIREMENTS FOR TRANSFER INTO IRONWORKERS UNIONS FROM OTHER IRONWORKERS LOCALS: 1971-72

Local unions	Interview	Years of experience required	Probationary period required	Test	Number of vouchers required	Vote of membership	Fee
Ironworkers Local 387 (Atlanta)	--	--	--	--	--	--	--
	(transfer automatic for members in good standing)						
Ironworkers Local 482 (Austin)	with examining board and executive board	--	90 days	--	--	--	--
Ironworkers Local 361 (New York)	--	--	"they like to look him over for a while"	--	--	seldom done	--
Ironworkers Local 40 (New York)	must appear before executive board and request transfer	--	--	only for men from mixed locals	--	seldom done	--
Ironworkers Local 84 (Houston)	with executive board	--	establish permanent residence	--	--	--	$50 if a member less than 2 years
Ironworkers Local 172 (Columbus)	--	--	--	--	--	--	--
	(transfer automatic for members in good standing)						
Ironworkers Local 469 (Jackson)	--	--	"quite a while"	--	--	--	if from Canada, must pay difference in initiation fees between home local and Local 469
Ironworkers Local 1 (Chicago)		(no transfers admitted for past 5 years)					
Ironworkers Local 377 (San Francisco)	([1])	([1])	([1])	([1])	([1])	([1])	([1])
Ironworkers Local 378 (Oakland)	--	--	"has to work a certain amount of time," depending on individual and type of work	--	--	--	--

[1] Information unavailable.

SOURCE: Interviews with ironworkers' union business agents.

The Permit System

Table 21 shows that the ironworkers' permit system is almost uniform. Ironworkers also are unique in allowing nonmembers and travelers to work on permit, usually for as long as they like or until the available jobs can be filled by local members. The fee is equal to the local dues, which are usually $2.50 per week, plus an "assessment" of $3.00 (which is paid only for those weeks the member is actually at work; if he is laid off, he pays only the $2.50 dues).

Plumbers and Pipefitters

The United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada do primarily commercial and industrial work, although residential plumbing is becoming organized in numerous areas. Several unions also have "metal trades" branches, whose members work in the less prestigious shop and maintenance areas. Also, Local 38 in San Francisco and Local 44 in Oakland have "marine" categories for shipyard workers, similar to those in the Bay Area IBEW locals.

The pipe trades in New York, Chicago, and Houston have separate locals for plumbers and pipefitters (also called steamfitters). In those cities there is considerable employment for pipefitters in refineries as well as in commercial heating, air conditioning, and refrigeration; the plumbers work on water piping and waste disposal. In the other cities, there are mixed locals with separate journeyman categories for plumbers and for pipefitters or steamfitters; however, in mixed unions, it is common for plumbers and pipefitters to work in each other's crafts, since the tasks involved are often quite similar.

Entry through Nonapprenticeship Routes

Requirements for admission to journeyman status in the construction branches of the pipe trades appear to be the most stringent of all of the unions under study. These entry standards, found in table 22, differ substantially from those which must be met for membership in the metal trades branches. Men who enter the unions from "off the street" are required to have from 3 to 5 years' experience in the trade, to be interviewed by the local executive committee or examining board, and (except in Steamfitters Local 638 in New York) to take a written (and sometimes practical) test over the trade and related mathematics, building codes, and blueprint reading.

TABLE 21. REQUIREMENTS FOR WORK UNDER IRONWORKERS UNIONS' PERMIT SYSTEM: 1971-72

Local unions	Workers eligible for permit	Test	Permits issued at business agent's discretion	Fee	Length of time a nonmember may work on permit
Ironworkers Local 387 (Atlanta)	anyone; travelers given precedence over nonmembers	---	yes	service dues (for travelers)	until he takes his journeyman tests
Ironworkers Local 482 (Austin)	anyone	---	yes	$2.50 per week dues, $3 per week "assessment"	unlimited
Ironworkers Locals 361 and 40 (New York)	anyone	---	yes	$2.50 per week	unlimited
Ironworkers Local 84 (Houston)	anyone	---	yes	$2.50 per week (=local dues)	unlimited
Ironworkers Local 172 (Columbus)	only specialists	---	yes	local dues	3 years
Ironworkers Local 469 (Jackson)	anyone	---	yes	service dues	unlimited
Ironworkers Local 1 (Chicago)	anyone	---	yes	local dues	unlimited
Ironworkers Local 377 (San Francisco)	([1])	([1])	([1])	([1])	([1])
Ironworkers Local 378 (Oakland)	travelers, apprentices (first 6 months), trainees	(trying to eliminate permit system)		service dues	unlimited

[1] Information unavailable.

SOURCE: Interviews with ironworkers' union business agents.

TABLE 22. REQUIREMENTS FOR ENTRY INTO PLUMBERS AND PIPEFITTERS UNIONS THROUGH NONAPPRENTICESHIP ROUTES: 1971-72

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
Plumbers and Steamfitters Local 72 (Atlanta); 1,000	5-man executive board (2 plumbers, 2 fitters, vice-president); before test	5 years	6 months (after test)	written; over trade (plumbing, fitting, or refrigeration); 3-man examination board (elected for each specialty)	1	yes	$500, ($5 a week during probation toward payment)
Plumbers and Steamfitters Local 286 (Austin); 400	before exam, examining committee	5 years	--	over specialty, 3-man elected examining board; 70 is passing	1; does not have to belong to this local	yes	$500
Plumbers Local 1 (New York); 2,500	by executive board[1]	--	--	--	2[1]	yes[1]	$100[1]
	--	5 in metal trades[2]	--	written and practical[2]	--	--	$400[2]
Plumbers Local 2 (New York); 5,000			6 months under a contractor (if not taken in through organizing)[1]	if recommended by contractor[1]	--	yes, if recommended[1]	$125[1]
	by executive board (vice-president and 4 elected members)[2]	5 years[2]	--	written; over trade; 4-man elected examining board[2]	--	yes[2]	$250[2]
	--	3 in metal trades[3]	--	written; over trade; 4-man elected examining board[3]	--	--	$125[3]
Steamfitters Local 638 (New York); 4,200	business agent at large, president, and secretary-treasurer	5 in the trade; 3 in union's metal trades branch	--	--	must be sponsored by contractor or foreman	--	$800 for construction; $80 for metal trades
Pipefitters Local 211 (Houston); 4,000 in building trades branch[4]							
(1) through organization	--	--	--	--	take the word of the contractor	--	--
(2) by examination	executive board reviews application	5 years	--	written; over trade, math, layout; like apprentice final; 3-man elected examining board; 60 is passing	--	--	$500
(3) from metal trades	--	5 in trade; 3 in metal trades	--	same as above	--	--	$300 (+$200 when entering metal trades); total $500

See footnotes at end of table.

TABLE 22 (CONTINUED)

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
Plumbers Local 68 (Houston); 1,000 [5]							
(1) commercial and industrial	5-man elected executive board--require State license	5 years (must be 22 years old)	--	written, practical, and drawing; made out by 3-man examining board; 70 is passing	--	yes (pro forma)	$200
(2) residential	--	--	--	--	--	--	$50
Plumbers and Pipefitters Local 189 (Columbus); 1,000	with examining board	5 years	--	over trade or specialty	3	--	$875
Plumbers and Steamfitters Local 681 (Jackson)	with business agent	5 years	--	written; over trade; 6-man elected exam board; similar to apprenticeship final	sponsorship is customary	yes	$1,000
Pipefitters Local 597 (Chicago); 7,500 in building trades	with board of 8 business agents (after 90 days on job)	if he comes from metal trades branch, 3 in metal trades	1 year	for welders only	employer must vouch for applicant's ability	--	$350
Plumbers Local 130 (Chicago); 3,800 in building trades	with executive board	5 years (including 3 if he comes from metal trades)	--	written; over city codes; by exam board (unless he has a license); also must get a city license	--	--	$800
Plumbers and Pipefitters Local 38 (San Francisco); 2,600 in building trades	([6])	([6])	([6])	([6])	([6])	([6])	([6])
Plumbers and Pipefitters Local 444 (San Francisco); 600	with examining board	5 years	--	written; over trade; examining board; 3 parts: (1) code, (2) drawing, and (3) blueprint	--	yes (pro forma)	$800

[1] Metal Trades Branch
[2] Construction Branch
[3] Requirements for metal trades journeymen who wish to be upgraded into the "A" branch (commercial and industrial construction).
[4] In addition, metal trades branch has 1,100-1,200 active members.
[5] To advance from residential to commercial and industrial work, one must stay in residential work for 3 years, take the journeyman test, and pay an additional $150 fee.
[6] Information unavailable.

SOURCE: Interviews with UA union business agents.

Probationary periods, vouchers, and votes by the membership are also required for admission. Finally, the journeyman initiation fees are among the highest of any union, ranging up to $875 in Columbus and $1,000 in Jackson.

A metal trades journeyman who wishes to work in the construction branch is required to spend from 3 to 5 years in the metal trades before he is eligible to take the construction journeyman trade test. If he passes, he must take up the difference between the construction initiation fee and the fee he paid when he joined the metal trades; this difference is often substantial.

Unions with residential or metal trades branches have much lower requirements for entry into these lower paying areas than for the commercial and industrial branches. Sponsorship by a contractor and payment of a nominal initiation fee are usually the only requirements for a metal trades book. However, as noted, it is difficult for metal trades journeymen to move into the construction branch.[9]

Entry through Apprenticeship

Table 23 shows that, as in the case of journeymen, admission standards for pipe trades apprentices are high. The maximum apprenticeable age for the pipe trades is usually the midtwenties. Except for Local 189 in Columbus, which dropped its educational requirement in 1971 due to pressure from minority groups, all locals require either a high school diploma or a GED. All programs except the one in Austin require aptitude tests; several require tests on mathematics as well. The JAC for each program interviews applicants, and initiation fees vary from $20 to $350. Those programs with relatively low fees require payment after a 6-month probationary period; except for Local 130, the few with large fees allow payment over the duration of the program.

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[9]Because of such difficulty in switching departments within the union, a Federal court in 1972 ordered Steamfitters Local 638 in New York to grant membership in the construction or "A" branch to 169 minorities, many of whom were members of its metal trades or "B" branch. The court affirmed that these minorities met the requirements for membership in the "A" branch, which included at least 5 years of practical working experience in the plumbing and pipefitting industries. See United States v. Steamfitters Local 638, 337 F Supp. 217 (1972).

TABLE 23. REQUIREMENTS FOR ENTRY INTO PLUMBERS AND PIPEFITTERS UNIONS THROUGH APPRENTICESHIP PROGRAM: 1971-72

Requirements for Indenture

Local unions	Age range	Formal education	Type of test	Interview	Fee
Plumbers and Steamfitters Local 72 (Atlanta)	18 to 25 (27 for ex-servicemen)	high school diploma or GED	aptitude test of Manpower Administration, USDL; math by JAC	JAC; "attitude is important"	$150 (after 6 months' probation)
Plumbers and Steamfitters Local 286 (Austin)	17 to 25 (28 for ex-servicemen); birth certificate	high school diploma or GED	--	JAC	$20 after probation
Plumbers Local 1 (New York)	18 to 22 (24 for ex-servicemen)	high school diploma or GED	aptitude	JAC	$25 per year for 4 years, $100 the last year
Plumbers Local 2 (New York)	18 to 24 (27 for ex-servicemen)	high school diploma or GED	aptitude (given by Stevens Institute) and physical	JAC	$100
Steamfitters Local 638 (New York)	18 to 23 (27 for ex-servicemen)	high school diploma or GED	aptitude (given by Stevens Institute) and physical	JAC	$100
Plumbers Local 68 (Houston)	18 to 22 (plus time in military service)	high school diploma or GED	IQ (TEC approved); arithmetic	JAC	$25 (after 6 months' probation)
Pipefitters Local 211 (Houston)	18 to 25	high school diploma or GED	aptitude (by TEC); math (by JAC)	JAC	$100 (after 6 months' probation)
Plumbers and Pipefitters Local 189 (Columbus)	18 to 26 (30 for ex-servicemen)	10th grade (formerly high school diploma or GED)	GATB	JAC	$40 (after 6 months' probation)
Plumbers and Steamfitters Local 681 (Jackson)	18 to 25	high school diploma or GED	aptitude; by State employment service	JAC	$40 (after 6 months' probation)
Pipefitters Local 597 (Chicago)	18 to 21 (plus time in military service or college)	high school diploma or GED	aptitude	JAC	$350 (paid over 5 years)
Plumbers Local 130 (Chicago)	18 to 25	high school diploma or GED	aptitude	JAC	$350 (after 6 months)
Plumbers and Pipefitters Local 38 (San Francisco)	18 to 30	high school diploma or GED	written and oral	JAC	(1)
Plumbers and Pipefitters Local 444 (Oakland)	18 to 26 (up to 6 months' credit for prior experience)	high school diploma or GED	aptitude; 70 is passing	JAC	$41 per year for 5 years (=$205)

TABLE 23 (CONTINUED)

Requirements for Journeyman Status

Local unions	Duration of program	Tests	Interview	Vote of membership	Number of vouchers required	Fee
Plumbers and Steamfitters Local 72 (Atlanta)	5 years (up to 1 year off for experience; seldom done)	every 4 1/2 months; no final; must pass licensing exam	--	--	--	none at completion of program (total membership fees of $105)
Plumbers and Steamfitters Local 286 (Austin)	5 years (up to 3 years for prior experience)	every 6 months; city licensing exam and State test for plumbers at end of course	--	--	--	$105 (total membership fees of $125)
Plumbers Local 1 (New York)	5 years	comprehensive final	--	--	--	none at completion of program (total membership fees of $200)
Plumbers Local 2 (New York)	5 years	tests and upgrading every 6 months; no final exam	--	--	--	$200 (total membership fees of $125)
Steamfitters Local 638 (New York)	5 years	yearly; comprehensive written final exam	--	--	--	$200 (total membership fees of $300)
Plumbers Local 68 (Houston)	5 years (up to 1 year credit for prior experience)	2 per year; comprehensive final; State licensing exam	--	--	--	$25 (total membership fees of $50)
Pipefitters Local 211 (Houston)	5 years	comprehensive final exam (written and practical)	--	--	--	none at completion of program (total membership fees of $100)
Plumbers and Pipefitters Local 189 (Columbus)	5 years (credit for experience)	every 6 months; no comprehensive final	--	--	--	none at completion of program (total membership fees of $40)
Plumbers and Steamfitters Local 681 (Jackson)	5 years (credit for experience)	yearly; comprehensive final	--	--	--	none at completion of program (total membership fees of $40)
Pipefitters Local 597 (Chicago)	5 years	at intervals; comprehensive final (written and oral)	--	--	--	none at completion of program (total membership fees of $350)
Plumbers Local 130 (Chicago)	5 years (provision for experience or prior training)	every 6 months for 3 years; comprehensive final; city licensing exam	--	--	--	none at completion of program (total membership fees of $350)
Plumbers and Pipefitters Local 38 (San Francisco)	5 years	([1])	--	--	--	([1])
Plumbers and Pipefitters Local 444 (Oakland)	5 years	final exam each year; no comprehensive final at end of program	--	--	--	none at completion of program (total membership fees of $205)

[1]Information unavailable.

SOURCE: Interviews with UA union business agents.

Apprenticeship programs in the pipe trades are 5 years long; some reduce the training period for men with experience in the trade. Most programs test apprentices regularly and give comprehensive examinations at the end of the training period. Where journeymen are licensed, the apprentices must pass licensing tests before becoming journeymen. Few locals charge fees at the end of the apprenticeship programs.

Transfers from Other Locals

UA members may transfer their memberships to other UA locals, but the process is not automatic (see table 24). Although recommendations and some experience in the trade are sometimes expected, the most common requirements are for the member to work for a year on permit in the area into which he wishes to transfer and to establish permanent residence in the labor market into which he is transferring. Several locals require interviews with the executive board or with the business agent.

The Permit System

Table 25 indicates that UA locals usually allow only travelers from other UA locals to work on temporary permits; some allow relatives of members or metal trades journeymen to work on permit, subject to the business agent's discretion. A few unions allow nonmembers to work in their jurisdiction, but these give preference to travelers (and, of course, to their own members). As a matter of fact, Local 444 in Oakland claimed to have a large number of minorities (nonmembers) working on permits in 1972. In all cases, the fees are equal to local dues.

Sheet Metal Workers

The sheet metal workers take pride in the fact that theirs is the only construction trade whose members begin with a flat sheet of tin, stainless steel, aluminum, or copper and fashion an entire finished product from it. Their work is commercial and industrial, and, unlike the work in most other crafts, involves a substantial amount of fabrication in shops as well as onsite construction. Sheet metal workers make and install gutters and downspouts, air conditioning and heating ducts, lockers, roofing, siding and decking, and stainless steel kitchen equipment. The Bay Area sheet metal workers' locals have separate divisions for shipbuilding workers.

TABLE 24. REQUIREMENTS FOR TRANSFER INTO PLUMBERS AND PIPEFITTERS UNIONS FROM OTHER PLUMBERS AND PIPEFITTERS LOCALS: 1971-72

Local unions	Interview	Years of experience required	Probationary period required	Test	Number of vouchers required	Vote of membership	Fee
Plumbers and Steamfitters Local 72 (Atlanta)	--	5	1 year	by city licensing board (soon State test will cover all)	--	--	--
Plumbers and Steamfitters Local 286 (Austin)	--	5	1 year as a traveler (may be waived by business agent)	--	--	--	--
Plumbers Local 1 (New York)	--	2 in plumbers and pipefitters	1 year as a traveler	--	--	--	--
Plumbers Local 2 (New York)	--	--	--	--	--	seldom done	--
Steamfitters Local 638 (New York)	--	--	1 year as a traveler, and live in the local's jurisdiction for 1 year	--	must be recommended by foreman and business agent-at-large	--	--
Pipefitters Local 211 (Houston)	--	--	must establish permanent residence in the area	--	--	--	--
Plumbers Local 68 (Houston)	--	--	-- (work must be available)	--	--	--	--
Plumbers and Pipefitters Local 189 (Columbus)	--	--	1 year	--	--	--	--
Plumbers and Steamfitters Local 681 (Jackson)	--	--	--	--	--	yes	--
Pipefitters Local 597 (Chicago)	with executive board	--	permanent residence	--	--	--	--
Plumbers Local 130 (Chicago)	with executive board	--	permanent residence; 1 year as a traveler	--	--	--	--
Plumbers and Pipefitters Local 38 (San Francisco)	[1]	[1]	[1]	[1]	[1]	[1]	[1]
Plumbers and Pipefitters Local 444 (Oakland)	with business agent	--	1 year living in area	--	must show written proof of experience	--	--

[1] Information unavailable.

SOURCE: Interviews with UA union business agents.

TABLE 25. REQUIREMENTS FOR WORK UNDER PLUMBERS AND PIPEFITTERS UNIONS' PERMIT SYSTEM: 1971-72

Local unions	Workers eligible for permit	Test	Permits issued at business agent's discretion	Fee	Length a nonm may on pe
Plumbers and Steamfitters Local 72 (Atlanta)	traveling members; students (in summer, mostly relatives of members)	--	yes	$8 per month	unlimited
Plumbers and Steamfitters Local 286 (Austin)	travelers only	--	yes	$8 per month traveler's dues	unlimited
Plumbers Locals 1 and 2 (New York)	travelers (plumbers and pipefitters only)	--	yes	$8 per month	unlimited
Steamfitters Local 638 (New York)	plumbers and pipefitters travelers or metal trades members	--	yes	$8 per month	unlimited
Pipefitters Local 211 (Houston)	anyone	--	yes	$14 per month	unlimited
Plumbers Local 68 (Houston)	plumbers and pipefitters travelers	--	yes	$4 per week	unlimited
Plumbers and Pipefitters Local 189 (Columbus)	anyone	--	yes	--	unlimited
Plumbers Local 681 (Jackson)	anyone	for welders; given on the job by employer	yes	2% of gross pay	unlimited
Pipefitters Local 597 (Chicago)	men on probation; travelers	--	yes	local dues	1 year for m bation; unl travelers
Plumbers Local 130 (Chicago)	travelers	--	yes	local dues	unlimited
Plumbers and Pipefitters Local 38 (San Francisco)	([1])	([1])	([1])	([1])	([1])
Plumbers and Pipefitters Local 444 (Oakland)	priority in work referral: A) own members B) travelers C) permit men and new members (anyone who says he is a journeyman; many minorities on permit; must know code)	written	yes	no dues until a member	1 year--then test

[1] Information unavailable.

SOURCE: Interviews with UA union business

As with the electrical workers, the sheet metal workers' unions are not divided according to specialties, even in the large cities. All of the locals in this study are mixed locals, containing broadly skilled journeymen as well as numerous specialists. Again, the construction specialties are informal categories rather than rigid subcrafts whose members must work only within their classification.

Entry Through Nonapprenticeship Routes

The standards of entry to the sheet metal workers' unions are rigorous but substantially similar from city to city (see table 26). Applicants are interviewed by either the business manager or the local examining board, after which they take a written or practical test over the trade or specialty. Several unions will not consider an applicant for membership with less than 4 years' experience in the trade. The initiation fee is the equivalent of 100 hours' pay at the journeyman rate in effect when the final payment is made. Thus, if a man has paid part, but not all, of the fee when the journeyman wage rate increases, his total fee increases.

An exception to this pattern is Sheet Metal Workers Local 28 in New York, which has a long-standing practice of admitting members only through the apprenticeship route. The business manager relented partially from this policy in 1968 and 1969 because of a drastic shortage of union mechanics, but since 1969 the union has reverted to past form and now has such high membership standards that no one can enter directly as a journeyman. This policy extends even to members of other locals who wish to transfer into Local 28, although travelers may work on permits without transferring.

Entry Through Apprenticeship

The maximum age for admission to the sheet metal workers' apprenticeship programs is 23 to 26. As shown in table 27, the other requirements are practically uniform: a high school diploma or GED (except in San Francisco); passage of an aptitude test (or, in the Bay Area, a battery of aptitude tests); an interview with the JAC; and payments toward the journeyman initiation fee made regularly over the duration of the program.

In San Francisco and Oakland, the apprenticeship programs are 4½ and 5 years long, respectively; the other programs are 4 years long, with credit for experience rarely extended. Testing is

TABLE 26. REQUIREMENTS FOR ENTRY INTO SHEET METAL WORKERS' UNIONS THROUGH NONAPPRENTICESHIP ROUTES: 1971-72

Local unions and estimated active membership	Interview	Years of experience required	Probationary period required	Type of test	Number of vouchers required	Vote of membership	Initiation fee
Sheet Metal Workers Local 85 (Atlanta); 700	3 members of 10-man examining committee	4	--	written (oral in some specialties), over trade; 70 is passing	2 (business agent and assistant)	--	100 hours pay at journeyman's wage rate in effect when fee is paid
Sheet Metal Workers Local 28[1] (New York); about 3,000	--	([2])	--	written and practical	--	--	--
Sheet Metal Workers Local 54 (Houston); 950 in construction, 400 in production	--	4	1 year to pay full fee	written; over trade; equivalent to 2-year apprenticeship test; 70 is passing	--	yes	100 hours pay at journeyman rate
Sheet Metal Workers Local 98 (Columbus); 1,000	with business manager	4	--	if business manager says so--administered by contractor	1 from contractor if test was administered by contractor	--	$770 (100 hours pay at journeyman rate)
Sheet Metal Workers Local 406 (Jackson); 200	with business agent	4	a period on permit	--	2	yes	100 hours pay at journeyman rate
Sheet Metal Workers Local 73 (Chicago); 6,000 in building trades	with business manager	--	--	written; over trade or specialty	contractor must guarantee employment	--	100 hours pay at journeyman rate
Sheet Metal Workers Local 104 (San Francisco); 700	with examining board	--	6 months	written and practical; some math	--	--	100 hours pay at journeyman rate

[1] These requirements only used in 1968 and 1969.
[2] Must be 30 years of age or older.

SOURCE: Interviews with sheet metal workers' union business agents.

TABLE 27. REQUIREMENTS FOR ENTRY INTO SHEET METAL WORKERS' UNIONS THROUGH APPRENTICESHIP PROGRAMS: 1971-72

Requirements for Indenture

Local unions	Age range	Formal education	Type of test	Interview	Fee
Sheet Metal Workers Local 85 (Atlanta)	17 to 26 (31 for ex-servicemen)	high school diploma	Georgia State Employment Service aptitude; (6th-7th grade math)	JAC	--
Sheet Metal Workers Local 28 (New York)	17 to 25 (30 for ex-servicemen)	high school diploma or GED	aptitude (given by independent testing company) and physical exam	JAC	$10 on application, $25 first 6 months; $40 each 6 months, third year; $50 each 6 months, fourth year (applies toward journeyman fee)
Sheet Metal Workers Local 54 (Houston)	17 to 24 (plus time spent in military service)	high school diploma or GED	aptitude (given by local)	JAC	100 hours pay at journeyman rate (payable over 4 years)
Sheet Metal Workers Local 98 (Columbus)	16 to 23 (plus time in military service)	high school diploma or GED	aptitude (independent testing service)	JAC	100 hours pay at journeyman rate (paid over 4 years)
Sheet Metal Workers Local 406 (Jackson)	18 to 25 (plus time in military service)	high school diploma or GED	aptitude; math by employment service	JAC	$4 monthly
Sheet Metal Workers Local 73 (Chicago)	17 to 23 (plus time in military service)	high school diploma or GED	aptitude	3-man committee (1 union, 1 from JAC, apprenticeship coordinator)	100 hours pay at journeyman rate (paid over 4 years)
Sheet Metal Workers Local 104 (San Francisco)	18 to 23	high school diploma or GED	3 written tests (must make 50 on each and total of 171) spatial relations, reading	JAC	50% of journeyman fee paid over 4 1/2 years
Sheet Metal Workers Local 216 (Oakland)	17 to 23 (plus up to 4 years in military service)	high school diploma (and transcript) or GED; math and mechanical drawing	4 aptitude tests	JAC	100 hours pay at journeyman rate (paid over 5 years)

TABLE 27 (CONTINUED)

Requirements for Journeyman Status

Local unions	Duration of program	Tests	Interview	Vote of membership	Number of vouchers required	Fee
Sheet Metal Workers Local 85 (Atlanta)	4 years (can test for credit for experience)	every 6 months; comprehensive final	--	--	--	100 hours pay at journeyman rate (part paid during apprenticeship)
Sheet Metal Workers Local 28 (New York)	4 years	every 6 months; no final exam	--	--	--	remainder of the journeyman fee (100 hours pay at journeyman rate)
Sheet Metal Workers Local 54 (Houston)	4 years	every 6 months; comprehensive final	--	--	--	total fee=100 hours pay at journeyman rate
Sheet Metal Workers Local 98 (Columbus)	4 years	at intervals; no comprehensive final	--	--	--	total fee=100 hours pay at journeyman rate
Sheet Metal Workers Local 406 (Jackson)	4 - 5 years	every 6 months; final is not comprehensive	--	--	--	total fee=100 hours pay at journeyman rate
Sheet Metal Workers Local 73 (Chicago)	4 years	every 6 months; no comprehensive final	--	--	--	total fee=100 hours pay at journeyman rate
Sheet Metal Workers Local 104 (San Francisco)	4 1/2 years	every year; no comprehensive final	--	--	--	total fee=100 hours pay at journeyman rate
Sheet Metal Workers Local 216 (Oakland)	5 years (some credit for experience on recommendation by employer)	no comprehensive finals; rated by instructors	--	--	2	total fee=100 hours pay at journeyman rate

SOURCE: Interviews with sheet metal workers' union business agents.

frequent, but only two programs have comprehensive final exams. Except in San Francisco, at the end of the program, apprentices are expected to pay the balance of the journeyman initiation fee.

Transfers from Other Locals

Except for Local 28 in New York, which does not accept transfers, and Local 216 in Oakland, which accepts all members in good standing, the sheet metal workers' locals under study have two principal requirements for transfers. These, shown in table 28, are passage of a trade test or the payment of any difference in initiation fees. In no case are these requirements made of journeymen who have been members for more than 5 years; in only one case (Local 104 in San Francisco) are both requirements used by the same union.

The Permit System

Only traveling members of other sheet metal workers' locals may work on permits, as shown in table 29. However, as in most unions, new members still making payments toward their initiation fees are considered to be on permits also. Travelers are charged $1.00 per week in three locals; the others charge no fee.

Summary of Union Admissions Policies

Three apparent patterns emerge from the foregoing catalog of union entrance procedures. The first is the great similarity between the entry standards of different locals within any international. Regardless of the size or location of an IBEW local union, for example, its apprenticeship standards tend to resemble those of other IBEW locals; bricklayers' and sheet metal workers' procedures are remarkably consistent, even though labor markets vary widely in size, location, and degree of unionization. The degree of conformity among entry standards varies, however. Fees vary within some internationals because the amounts are influenced by local rates of compensation and labor market conditions. Other variations are apparent in age and education requirements, and (especially for carpenters) in types of test and interview procedures used. Entrance requirements for apprentices usually vary less within an international union than do policies with respect to transfers between locals.

TABLE 28. REQUIREMENTS FOR TRANSFER INTO SHEET METAL WORKERS' UNIONS FROM OTHER SHEET METAL WORKERS' LOCALS: 1971-72

Local unions	Interview	Years of experience required	Probationary period required	Test	Number of vouchers required	Vote of membership	Fee
Sheet Metal Workers Local 85 (Atlanta)	--	4	--	over specialty and only if man has held a card less than 5 years	--	--	--
Sheet Metal Workers Local 28 (New York)	(transfers are not accepted)						
Sheet Metal Workers Local 54 (Houston)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 54, if book is less than 5 years old
Sheet Metal Workers Local 98 (Columbus)	--			if book is less than 5 years old			1 month's dues
	(otherwise, transfer automatic for a member in good standing)						
Sheet Metal Workers Local 406 (Jackson)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 406, if book is less than 5 years old
Sheet Metal Workers Local 73 (Chicago)	--	--	--	--	--	--	must pay difference in initiation fees between home local and Local 73, if book is less than 5 years old
Sheet Metal Workers Local 104 (San Francisco)	--	--	--	written and practical *if* a journeyman less than than 5 years (unless he served apprenticeship)	--	--	must pay difference in initiation fees between home local and Local 104, if a journeyman less than 5 years
Sheet Metal Workers Local 216 (Oakland)	Must apply for membership or be requested by contractor. Otherwise, any member in good standing may transfer into Local 216.						

SOURCE: Interviews with sheet metal workers' union business agents.

TABLE 29. REQUIREMENTS FOR WORK UNDER SHEET METAL WORKERS' UNIONS PERMIT SYSTEM: 1971-72

Local unions	Workers eligible for permits	Test	Permits issued at business agent's discretion	Fee	Length of time a nonmember may work on permit
Sheet Metal Workers Local 85 (Atlanta)	traveling members only	--	yes	$1 per week, at business agent's discretion	unlimited
Sheet Metal Workers Local 28 (New York)	travelers	--	yes	--	unlimited
Sheet Metal Workers Local 54 (Houston)	travelers; people paying on journeyman books	--	yes	travelers--$1 per week; others--$5 per day till book is paid for	unlimited
Sheet Metal Workers Local 98 (Columbus)	travelers				
Sheet Metal Workers Local 406 (Jackson)	anyone	--	yes	--	must apply for membership or eventually permit is revoked
Sheet Metal Workers Local 73 (Chicago)	travelers	--	yes	--	unlimited
Sheet Metal Workers Local 104 (San Francisco)					
Sheet Metal Workers Local 216 (Oakland)	travelers	--	yes	$1 per week	unlimited

SOURCE: Interviews with sheet metal workers' union business agents.

The second pattern is in the degree to which entrance requirements for various locals differ from each other within a labor market. The admissions policies for journeyman bricklayers seldom resemble the admissions procedures in the plumbers' union. An IBEW local's attitude toward transfers will usually differ from that of a carpenters' local within the same labor market. However, there is likely to be less diversity in apprenticeship entrance requirements and permit procedures of various local unions in a particular city.

The third major conclusion is that union admissions policies vary from quite lax to highly stringent as the degree of preparation and nonmanual skill required in the trade increases. Thus, for direct admission of journeymen, the bricklayers require only two vouchers and an initiation fee of about $200, while the plumbers usually require tests over the trade, several years experience, interviews with union executive boards, and initiation fees of up to $1,000. For apprenticeship, the carpenters often do not require any aptitude test or a high school education; the electricians invariably require a high school diploma or GED and an aptitude test. Transfer is virtually automatic in the bricklayers' and carpenters' unions, while the other internationals impose numerous requirements on members who wish to transfer. It is thus possible to imagine a continuum of admissions practices ranging from extremely demanding in the UA, IBEW, and sheet metal workers' unions to less demanding in the carpenters' and bricklayers' unions, with the ironworkers somewhere in the middle.

This last pattern of union entry standards provokes an important question about the rationale for the standards as they exist: if the unions desire to restrict the size of their membership in order to maintain the union wage rate, why do the crafts where skills are most easily acquired have the lowest entrance requirements? Should not those unions be the ones to erect artificially high barriers to entry to keep their numbers from increasing too rapidly, rather than seeming to encourage growth by imposing only minimal standards? A more complete understanding of the role of these entrance procedures in union and industry affairs may provide the answer.

A Rationale for Union Entry Procedures

A striking feature of the processes by which craftsmen gain access to jobs in the unionized sector of the construction industry is the wide variation among the requirements and standards for each method of entry. In assessing the importance of the multiplicity of entry routes and standards, it is necessary to consider both the nature of the construction industry and the purpose each route serves.

As noted in Chapter II, the demand for construction manpower in a given area may experience heavy seasonal and cyclical variations and is affected by both monetary policy and large public contracts. Thus, it may not be quite appropriate to refer to "the construction labor force" in any city. Rather, a more accurate statement would be that there is usually a core of well trained mechanics who work practically full time in the construction industry and that this core is augmented, often greatly, by an influx of less qualified men from other trades and by mechanics from other areas when increased activity calls for an expansion of the work force.

The Role of Apprenticeship

The building trades unions rely on apprenticeship to provide most of the nucleus of well rounded journeymen as well as future foremen and other supervisory personnel. The unions contend that the more formal type of training offered in apprenticeship produces a mechanic who has not only been exposed on the job to all of the facets of his trade but who has also been taught the theory of the trade in the classroom. The relatively strict age and formal education standards for apprenticeship programs are understandable, because unions are looking for men who, in their judgment, are capable of learning the trades and who can best carry on the unions' tradition of skilled craftsmanship.

The mechanical trades impose higher standards on their apprentices than bricklayers' and carpenters' unions do, because the mathematical and technical skills required in the electrical, sheet metal, and pipe trades are much more advanced than those required in the other trades.

The Role of Entry through Nonapprenticeship Routes

The construction unions naturally want to organize as much of the construction work force as possible in order to prevent the erosion of union wage rates by open shop competition. For this reason, organization of open shops is an important task of many local unions, especially in the South, where the open shop is much more common than in larger cities outside the South. A considerable number of union journeymen have become members when nonunion shops were unionized. Many others have entered the union from "off the street" by virtue of meeting the unions' several minimum requirements. Still others have been upgraded from lower skilled branches of the unions (e.g., the "metal trades") or from the helper categories, which were more common before apprenticeship became a prominent training system within the trades. Finally, there are numerous members who have transferred from other locals.

The requirements are less stringent for journeymen entering directly than for apprentices because in evaluating a prospective journeyman, a union wishes only to know whether the man is capable of doing the work, rather than whether he is capable of learning to do it. If he is proficient and if work is available, he is usually accepted, particularly if he is a member of another local. The unions would be unwise to reject very many qualified men who could compete with them for work. For this reason, the lower skilled trades cannot afford to impose very high entry standards on journeymen, since it is less difficult for workers to learn those trades outside formal training programs and to constitute nonunion competition. Should these trades raise their standards substantially, they would be unable to extend their jurisdictions over shops that are presently nonunion. The mechanical trades, on the other hand, fear competition only from the most highly skilled nonunion craftsmen; thus, they can set and maintain their admissions standards at very high levels in order to preserve the prestige of their trades.

The Role of the Permit System

Although journeyman and apprentice entry fluctuates with the amount of work available, the greatest variation is found in the number of men who work as travelers or on permits. During times of locally high demand, travelers from other areas are attracted into the jurisdictions of the busy locals. Permits are issued to men who usually work in the residential sector, in shipyards, in factory maintenance crews -- in fact, to many men who would be unable to meet the unions' standards for membership. Although these men may not be fully qualified when they first go to work, they commonly acquire skills on the job which allow some of them to join the unions later.

Thus, aside from the uncommon practice of transferring into one local union from another, there are three chief means of working within the jurisdiction of the building trades unions -- entry through apprenticeship, entry as a journeyman, and temporary work on permit or as a traveler. The first is designed to train the complete craftsman, the man who is most likely to advance to a supervisory position. The second allows the union to increase its size and reduce the threat of nonunion competition; the last allows the unions to expand and contract the number of jobs it can fill without changing its membership standards.

The traditional routes of entry into the building trades should be understood for what they are -- means of serving the industry and those who know how to gain access to it. In that context, they have worked reasonably well, providing both

stability and flexibility within a labor market which could otherwise be chaotic. However, in many cases exclusionist entry procedures have operated specifically to the detriment of minority groups. Public demands for equalitarian practices on the part of the unions should make the traditional routes more open to minorities. However, for rapid integration of the trades to take place, other means of access may be needed in some locals, for the existing routes impose standards which may always be applied unevenly. Some possible alternative routes to union membership are outlined in the first chapter.

Chapter IV

BACKGROUNDS AND EXPERIENCES OF ECONOMICALLY ACTIVE JOURNEYMEN

To obtain a fuller picture of the unions studied, we interviewed journeymen regarding their experiences and backgrounds. In the pilot phase of the project (in Austin, Atlanta, and New York), we attempted to obtain this information through questionnaires, but this proved inadequate because the names and addresses of journeymen could not be obtained and the response from questionnaires distributed at union meetings was poor.[1] As a consequence we decided to use confidential personal interviews of a sample of economically active journeymen in Chicago, Columbus, Houston, Jackson, Oakland, and San Francisco.

Interview Procedure

Field interviews were conducted between June 1972 and July 1973. Wherever possible, interviews were conducted with a sample of journeymen taken from the pension fund records used for the comparison of hours worked (see Chapter V). There were two advantages in interviewing the same journeymen for whom we had hours-worked data: information was provided for the hours-worked comparison (apprenticeship graduation, etc., was verified), and the sample was more representative. However, in about half of the locals, union officials would not permit use of the names from our hours-worked sample to contact members at home. For these unions, interviews were conducted at the union hall before and after meetings, during referral operations, or on work sites whenever contractors gave their permission. Union cooperation, although good for the most part, was not universal. Of the 38 local jurisdictions approached, 8 denied us permission to interview or to make any contact with their members.

In all, 1,234 interviews were conducted with journeymen in 28 local jurisdictions (see table 30). The interview covered several areas: family background, education, sources of training, union entry procedures and requirements, current working and union status, and supervisory experience (see appendix B for interview guide).

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[1]For a further presentation of the results obtained from the questionnaire as well as further discussion of the problems involved, see William S. Franklin, "An Analysis of Traditional Routes of Entry into Selected Construction Unions" (unpublished Ph. D. dissertation, University of Texas at Austin, 1972), pp. 92-115.

TABLE 30. NUMBER OF JOURNEYMEN INTERVIEWED, BY CITY AND TRADE, 1972-73

Trade	Chicago	Columbus	Houston	Jackson	Oakland	San Francisco	Totals
Bricklayers	Refused	37	Refused	20	34	34	125
Carpenters	63	39	120	22	23	55	322
Electricians	Refused	Refused	36	32	50	54	172
Ironworkers	7	33	37	18	52	40	187
Plumbers and Pipefitters	76[1]	29	70[2]	35	48	Refused	258
Sheet Metal Workers	Refused	34	86	Refused	50	Refused	170
Totals	146	172	349	127	257	183	1,234

[1] Plumbers only; pipefitters refused permission to interview.

[2] Includes Plumbers Local 68 and Pipefitters Local 211.

Comparison of Apprenticeship Graduates and Others

On the whole, the interview sample was almost evenly split between apprenticeship graduates and others. Of the 1,234 journeymen interviewed, 599 (or 49 percent) were graduates of bona fide apprenticeship programs[2] (see table 31).

Age and Experience at the Trade

The apprenticeship graduates were younger, by and large, with fewer years of experience at the trade. Apprenticeship graduates averaged 37.8 years of age and had spent an average of 17.1 years at the trade. The nonapprenticeship group averaged 46.0 years of age and had spent an average of 22.7 years at the trade. (See tables 32 and 33.)

Educational Background

The apprenticeship graduates also averaged more years of formal schooling. As shown in table 34, the apprenticeship graduates averaged 12.1 years of formal education as compared with 11.1 years for nonapprentices. This conclusion holds for every craft. Moreover, 471, or 79 percent, of the apprenticeship graduates were high school graduates as compared with only 374, or 59 percent, of the nonapprenticeship group. Electricians had more formal education on the average than any other craft, followed by plumbers and pipefitters, sheet metal workers, carpenters, and bricklayers.

Friends and Relatives in the Trade

Apprenticeship graduates more frequently had friends and relatives in the trade: 32 percent of apprenticeship graduates had fathers who worked at the trade as compared with only 24 percent of the others (see table 35). Similarly, 63 percent

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[2]A respondent was identified as a graduate of a bona fide apprenticeship program if he stated that he completed an apprenticeship program which lasted at least 36 months. Further, unless the program was conducted in his present local union, it had to include related classroom instruction. Programs operated in the respondent's present local union were treated as apprenticeships, regardless of whether or not they contained related instruction components. Finally, the apprenticeship program had to be in the trade in which the respondent was currently working. A few of those interviewed -- particularly in ironwork -- indicated that they had completed an apprenticeship in another trade.

TABLE 31. APPRENTICESHIP TRAINING BACKGROUND OF JOURNEYMEN INTERVIEWED, BY TRADE

Trade	Apprenticeship graduates	Others	Total	Percent apprenticeship graduates
Bricklayers	76	49	125	61
Carpenters	126	196	322	39
Electricians	96	76	172	56
Ironworkers	46	141	187	25
Plumbers and Pipefitters	158	100	258	61
Sheet Metal Workers	97	73	170	57
Totals	599	635	1,234	49

SOURCE: Interviews with construction journeymen.

TABLE 32. CAREER ADVANCEMENT PATTERNS OF JOURNEYMEN INTERVIEWED, BY TRADE AND APPRENTICESHIP BACKGROUND

Trade and apprenticeship background	Age[1] when started at trade	Age at union entry	Age at journeyman initiation	Age at initial supervisory experience	Age at time of interview (1972-73)	Total respondents
BRICKLAYERS						
Apprenticeship graduates	19.8	22.0	25.2	30.1	41.8	76
Others	21.0	26.7	26.7	33.4	46.5	49
CARPENTERS						
Apprenticeship graduates	20.4	21.8	25.3	27.4	35.8	126
Others	22.6	28.8	29.1	32.9	43.0	195
ELECTRICIANS						
Apprenticeship graduates	20.8	22.4	26.1	28.3	38.4	96
Others	22.5	28.1	29.9	32.9	50.9	75
IRONWORKERS						
Apprenticeship graduates	20.9	22.1	24.9	25.6	31.9	46
Others	24.1	26.4	26.9	31.6	45.0	139
PLUMBERS & PIPEFITTERS						
Apprenticeship graduates	21.0	21.8	26.1	29.8	40.4	158
Others	24.4	31.4	31.6	33.9	47.3	99
SHEET METAL WORKERS						
Apprenticeship graduates	20.9	22.4	25.3	28.0	34.8	97
Others	23.7	27.5	27.5	29.0	49.0	73
ALL TRADES						
Apprenticeship graduates	20.6	22.0	25.6	28.5	37.8	599
Others	23.2	28.3	28.7	32.8	46.0	630

[1] Age in this table refers to mean average age.

SOURCE: Interviews with construction journeymen.

TABLE 33. YEARS OF EXPERIENCE AT THE TRADE OF JOURNEYMEN INTERVIEWED, BY TRADE AND APPRENTICESHIP BACKGROUND

Trade and apprenticeship background	Mean years experience at trade	Total respondents
BRICKLAYERS		
Apprenticeship graduates	22.1	76
Others	25.5	49
CARPENTERS		
Apprenticeship graduates	15.5	125
Others	20.4	195
ELECTRICIANS		
Apprenticeship graduates	17.7	96
Others	28.2	74
IRONWORKERS		
Apprenticeship graduates	10.9	46
Others	20.8	140
PLUMBERS & PIPEFITTERS		
Apprenticeship graduates	19.5	158
Others	22.7	100
SHEET METAL WORKERS		
Apprenticeship graduates	13.9	97
Others	25.3	73
ALL TRADES		
Apprenticeship graduates	17.1	598
Others	22.7	631

SOURCE: Interviews with construction journeymen.

TABLE 34. FORMAL EDUCATIONAL BACKGROUND OF JOURNEYMEN INTERVIEWED, BY TRADE

[Distribution of journeymen by years of formal schooling]

Years of formal schooling	BRICKLAYERS		CARPENTERS		ELECTRICIANS		IRONWORKERS		PLUMBERS & PIPEFITTERS		SHEET METAL WORKERS		ALL TRADES	
	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others
0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1-4	0	0	0	3	1	0	0	4	0	2	0	0	1	9
5-8	9	9	4	30	1	8	4	15	6	12	4	14	28	88
9-11	16	15	31	45	11	9	9	49	21	27	10	14	98	159
12	36	16	55	73	51	43	20	46	76	37	57	30	295	245
GED	1	3	4	4	3	1	0	1	0	2	7	5	15	16
13-15	14	5	25	31	27	13	11	21	49	16	19	9	145	95
16	0	0	5	7	2	0	1	3	5	2	0	1	12	13
17 and above	0	0	1	2	0	1	1	1	1	1	0	0	4	5
Mean grade level completed[1]	11.5	10.5	11.9	11.1	12.2	11.7	11.7	11.0	12.3	11.3	11.9	10.8	12.1	11.1
Percentage of high school graduates	67	49	72	60	86	77	72	51	83	59	86	62	79	59
Total respondents	76	49	125	195	96	75	46	140	158	99	97	73	598	631

[1]Mean grade level computations exclude the journeymen with a GED.

SOURCE: Interviews with construction journeymen.

TABLE 35. KNOWLEDGE OF SOMEONE IN THE TRADE BEFORE ENTRY: APPRENTICESHIP GRADUATES AND OTHERS, BY TRADE

Item	BRICKLAYERS		CARPENTERS		ELECTRICIANS		IRONWORKERS		PLUMBERS & PIPEFITTERS		SHEET METAL WORKERS		ALL TRADES	
	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
Father in trade. . .	24 32	14 30	49 40	67 35	25 26	16 22	11 24	26 19	52 33	16 16	21 22	13 18	182 31	152 24
Father in trade and in union	23 31	8 17	35 29	35 18	23 24	11 15	11 24	24 17	49 31	12 12	18 19	10 14	159 27	100 16
Other relatives or friends in union .	39 52	26 55	74 61	102 53	51 54	27 36	28 62	87 63	103 65	50 51	70 72	41 56	365 62	333 53
Both father and other relatives or friends in union .	15 20	6 13	27 22	24 12	18 19	5 7	8 18	17 12	41 26	10 10	17 18	9 12	126 21	71 11
None of the above	27 36	14 30	31 25	52 27	38 40	29 39	13 29	36 26	45 28	45 45	24 25	30 41	177 30	229 37
Total respondents . . .	75	47	123	192	95	74	45	138	158	99	97	73	592	623

NOTE: Columns are nonadditive because the responses are not mutually exclusive.

SOURCE: Interviews with construction journeymen.

of apprenticeship graduates knew other relatives or friends working at the trade before they were indentured, as compared with only 54 percent of the others. These data support the idea that knowing someone is an important factor in entering the trade for both apprenticeship graduates and others.

Supervisory Experience

A comparison of the supervisory experience of apprenticeship graduates and others shows a clear pattern: apprenticeship-trained journeymen advanced into supervisory positions more often, at an earlier age, and more rapidly than other journeymen. For all trades, approximately three of every four journeymen answered affirmatively to the question, "Do you work as a foreman or superintendent?" (see table 36). However, the aggregate data conceal important differences by trade. Apprenticeship graduates work more regularly as supervisors than do other journeymen in all trades except ironwork. In carpentry and the pipe trades, apprenticeship graduates have more often had supervisory experience and work as supervisors all of the time. In bricklaying and sheet metal work, apprenticeship graduates and others who had worked as supervisors at all are about evenly matched. However, apprenticeship graduates more often worked exclusively as supervisors in these two trades.

In electrical work, the picture was mixed. Whereas the nonapprenticeship group had more often had some supervisory experience, much of this advantage is in the category "working as supervisor less than half the time." Apprenticeship graduates in electrical work more commonly than other journeymen held full-time supervisory positions, but the advantage is slight. Only in ironwork do the data show a reverse pattern: nonapprenticeship-trained journeymen more often work as supervisors in every category. This exception could be due to the fact that iron workers' apprenticeship programs were established more recently than those of the other trades, so supervisors tend to be drawn from older nonapprenticeship-trained groups.

As table 37 illustrates, apprenticeship graduates in every trade advance to supervisory status more rapidly than others do. The advantage apprenticeship graduates have is greatest in electrical work and ironwork, but for every trade, the mean average years between journeyman initiation and initial supervisory job held consistently is shorter for apprenticeship graduates than for others.[3]

[3]The response rate to the probe question eliciting these data was lower than the response rate to the previous questions regarding supervisory experience. A comparison of tables 36 and 37 shows that only 638 of 804 (or 79 percent of those who answered that they work as foremen or superintendents) were able to date their initial supervisory experience. Most commonly, those who could not remember were respondents who worked as supervisors least.

TABLE 36. SUPERVISORY EXPERIENCE OF JOURNEYMEN INTERVIEWED: APPRENTICESHIP GRADUATES AND OTHERS, BY TRADE

[Percentages of respondents]

Do you work as a foreman or superintendent? If so, about how much of the time?	BRICKLAYERS		CARPENTERS		ELECTRICIANS		IRONWORKERS		PLUMBERS & PIPEFITTERS		SHEET METAL WORKERS		ALL TRADES	
	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others
YES	77	76	74	64	78	80	69	84	76	64	67	68	74	72
All the time	19	8	33	18	26	19	11	25	25	15	28	21	26	19
Half or more of the time	16	20	17	16	25	29	18	25	16	15	15	24	18	21
Less than half the time	19	6	10	10	12	19	20	17	12	18	10	8	13	13
Very little	15	29	11	11	8	11	18	14	14	12	7	7	12	12
Extent unspecified			2	2	2				1				1	1
Has worked as foreman in past (not currently)	8	12	2	7	2	3	2	3	8	5	7	8	5	6
NOT AT ALL	23	24	26	36	22	20	31	16	24	36	33	32	26	28
Total respondents	74	49	126	195	96	75	45	138	156	95	94	72	593	624

NOTE: Columns may not add to totals because of rounding.

SOURCE: Interviews with construction journeymen.

TABLE 37. SUPERVISORY ADVANCEMENT AMONG JOURNEYMAN INTERVIEWED: APPRENTICESHIP GRADUATES AND OTHERS, BY TRADE

ITEM	BRICKLAYERS		CARPENTERS		ELECTRICIANS		IRONWORKERS		PLUMBERS & PIPEFITTERS		SHEET METAL WORKERS		ALL TRADES	
	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others	Apprenticeship graduates	Others
Total respondents with supervisory experience	44	24	68	101	61	40	26	93	107	47	55	41	361	346
Mean average years between journeyman initiation and initial supervisory job	5.7	9.3	4.3	5.7	3.8	7.5	2.3	6.7	5.4	6.0	4.5	8.8	4.6	6.9

SOURCE: Interviews with construction journeymen.

Training Since Joining Union

In the aggregate, construction journeymen interviewed were almost equally likely to go on for further training in their trade, regardless of their training background. Table 38 indicates that apprenticeship graduates hold a slight lead in continuing their training. On average across trades, about 3 of every 10 journeymen interviewed have taken a course to improve their skills. Two of 10 take union-sponsored courses while 1 in 10 enrolls in programs outside the union, such as night school, correspondence courses, manufacturers' seminars, or college courses.

The Relative Importance of Apprenticeship as an Entry Route over Time

Business agents often asserted that the "back door" to union entry has been closing over the years. The data in table 39 show that apprenticeship became relatively more important as an entry route for all trades in the decade of the 1950's. Apprenticeship formed an increasingly important entry route for the ironworkers and the sheet metal workers in the 1960's, as compared with the 1950's. However, the picture from the 1950's to the early 1970's is mixed. Except for sheet metal and ironwork, the data do not show that unions have been very successfully "closing the back door" to union entry.

Some authors have hypothesized that the unions have tightened their entry requirements since the Civil Rights Act of 1964 by reducing or eliminating nonapprenticeship routes. However, the data do not support this contention. The trend toward apprenticeship entry was in process long before 1964, and the data do not indicate any sharp breaks in favor of apprenticeship since 1964. However, civil rights forces were attacking the discriminatory practices of building trades unions before the 1960's, so this action might have caused unions to tighten and formalize their entry requirements.

Entry Through Nonapprenticeship Routes

Little is known about how workers become journeymen without coming through apprenticeship routes. Foster[4] studied the

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[4]Howard Foster, "Nonapprenticeship Sources of Training in Construction," Monthly Labor Review, Vol. 93, No. 2 (February 1970), pp. 21-26.

TABLE 38. JOURNEYMEN INTERVIEWED BY TYPE OF TRAINING TAKEN SINCE JOINING UNION (OR APPRENTICESHIP GRADUATION), 1972

Type of training	Apprenticeship graduates		Others	
	Number	Percent	Number	Percent
Union journeymen courses	96	18	94	17
Courses outside of union	54	10	41	7
Both union and outside of union	17	3	17	3
Unspecified training	3	1	5	1
Total with training	170	32	157	28
No additional training	360	68	396	72
Total respondents	530	100	553	100

SOURCE: Interviews with construction journeymen.

TABLE 39. PERCENTAGE OF APPRENTICESHIP GRADUATES AMONG INTERVIEWED JOURNEYMEN, BY PERIOD OF UNION ENTRY

Trade	Apprenticeship graduates as a percentage of all journeymen who entered union			
	Prior to 1950	1950–1959	1960–1972	All years
Bricklayers	58	66	57	61
Carpenters	31	50	40	39
Electricians	35	78	66	56
Ironworkers	3	22	41	25
Plumbers and Pipefitters	63	68	54	61
Sheet Metal Workers	20	62	77	57
Total, all trades	36	58	52	49

SOURCE: Interviews with construction journeymen.

training of nonapprentices but did not concentrate on the process of entry into the union. One of the purposes of our study has been to fill this gap. The interviews included questions about both sources of training and union entry procedures.

Nonapprenticeship Sources of Training

On the whole, working up from a laborer or helper category is the means used by the largest number of bricklayers and carpenters to obtain their skills (see table 40). Although this is also a significant source for the other trades, the category "on-the-job training in open shop" was mentioned most frequently by respondents in all of the other trades. Of course, the importance of open shop training varied by area; not unexpectedly, it was most common in Houston, which has a large nonunion sector.

A large proportion of bricklayers (and to a lesser extent, electricians and sheet metal workers) were trained in public vocational education. Both public and private vocational education are major sources of training for electrical work and ironwork (in welding). Other than this, however, private vocational education does not appear to be very significant. Training in the military was mentioned as a source of training by all trades, but in electrical work it was most common and rated the most highly.

The category "other related industry experience" varied significantly by trade, both in terms of importance and in terms of the industries which provided experience for each trade. Other related industry experience was mentioned by over a fourth of the electricians surveyed; a majority of these were trained in Houston and Bay Area shipyards.[5] Other electricians had worked with companies such as Western Electric or utility companies or as electroplaters, automobile electricians, or electrical supply store clerks.

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[5] These data support a comment made by George Strauss: "...indeed, a fair number of construction craftsmen in the Bay area learned their occupation in the shipyards during World War II and have since 'worked up.'" See "Apprenticeship: An Evaluation of the Need," in Arthur M. Ross (ed.) Employment Policy and the Labor Market (Berkeley: University of California Press, 1965), p. 325. We found this to be true in Houston, another port city. However, we found only electricians and sheet metal workers with backgrounds from the shipyards.

TABLE 40. SOURCES OF TRAINING AT TRADE PRIOR TO UNION ENTRY: NONAPPRENTICESHIP GROUP

Type of training	Bricklayers		Carpenters		Electricians		Ironworkers		Plumbers & Pipefitters		Sheet Metal Workers		Total, all trades	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Laborer or helper	23	47	86	44	22	29	31	22	36	36	18	25	216	34
On-the-job training in open shop	10	20	57	29	24	32	51	36	47	47	36	50	225	35
Public vocational education	8	16	17	9	9	12	7	5	7	7	10	14	58	9
Private vocational education	2	4	6	3	13	17	10	7	1	1	2	3	34	5
Military	1	2	19	10	12	16	7	5	4	4	5	7	48	8
Other related industry experience	1	2	18	9	23	30	16	11	7	7	3	4	68	11
Government training program	1	2	2	1	4	5		0		0	1	1	8	1
Other miscellaneous training	7	14	32	16	7	9	18	13	13	13	4	5	81	13
No prior training	7	14	27	14	13	17	33	23	10	10	7	10	97	15
Total respondents	49		196		76		141		100		73		635	

NOTE: Columns are nonadditive because the responses are not mutually exclusive.

SOURCE: Interviews with construction journeymen.

Bricklayers, on the other hand, had no outside industry experience (although one of the respondents classified as helper had worked in a brickyard). With the exception of furnace work in the steel industry, jobs outside the construction industry provide no opportunity to gain experience as a bricklayer.[6] Few sheet metal workers had other related industry experience. Two had worked in shipyards, and a third had worked in an automobile shop.

Among ironworkers, four had learned rigging and/or welding in the shipyards as plate hangers. Further, one ironworker had gained experience as a sheet metal worker, whereas five mentioned that by working as boilermakers they had picked up welding skills which enabled them to get into ironwork. Other types of related industry experience included welding in railroad maintenance, welding and rigging in the oil fields, and working as a foundryman. Among the plumbers, sources of related industry training were underground public utility maintenance, building maintenance, and (especially in Houston) the oil fields.

Government training appears to be significant only for electricians, 5 percent of whom mentioned this source. No more than 2 percent of interviewees in the other trades had been trained in such programs.

The category "other miscellaneous training" included formal training in foreign countries, college courses, training with a close relative, and working as a contractor.

One out of 10 journeymen interviewed had had no prior training at all. Many of this group entered by gaining experience while working on permit. Twenty-three percent of the ironworkers surveyed had had no training prior to joining the union -- one of the crafts which has traditionally made greatest use of the permit system.

Time Spent at Trade before Reaching Journeyman Status

In view of the controversy over the length of apprenticeship programs, it is instructive to answer the question, "How fast were nonapprenticeship-trained journeymen able to learn the trade?" Table 41 gives the respondents' experience at the trade before they were able to attain journeyman status.

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[6] We are indebted to George Strauss for this point. Personal correspondence (August 7, 1973).

TABLE 41. TIME SPENT IN TRADE BEFORE REACHING CURRENT JOURNEYMAN CLASSIFICATION, BY TRADE: NONAPPRENTICESHIP GROUP

Years of experience at the trade before becoming journeyman	Percentage distribution of respondents						
	Bricklayers	Carpenters	Electricians	Ironworkers	Plumbers & Pipefitters	Sheet Metal Workers	All trades
Less than 1 year	13	12	3	24	11	18	14
1 year	9	7	6	11	11	12	9
2 years	9	11	7	21	10	12	13
3 years	11	15	7	14	5	11	11
4 years or more	60	55	77	30	61	47	53
Mean years in trade before becoming journeyman	5.8 years	6.5 years	7.6 years	3.1 years	6.9 years	4.6 years	5.7 years
Total respondents	47	188	71	132	96	66	600

NOTE: Percentages may not add to 100 percent because of rounding.

SOURCE: Interviews with construction journeymen.

It is notable that the mean average time for every trade except ironwork is longer than the term of apprenticeship. However, a significant proportion of workers pick up the trade faster than the normal 4-year term of apprenticeship.[7] The specific percentage varies by trade: electricians (23 percent), plumbers (39 percent), bricklayers (40 percent), carpenters (45 percent), sheet metal workers (53 percent), and ironworkers (70 percent). Of course, this is not to say that all learn every facet of the trade as well as an "all-round" apprenticeship graduate; but it does indicate that many workers can and do pick up enough skills in less than the apprenticeship term to hold a journeyman's job.

It might be contended that attainment of journeyman status is artificially delayed by experience requirements for those who have not served apprenticeships. As table 42 shows, the bulk of journeymen who entered through nonapprenticeship routes were accepted as journeymen within a year. However, there is some variation by trade. Electricians appear to advance to journeyman status the slowest. This may be because the trade requires more formal and nonmanual training. Bricklayers have the next highest proportion of workers who fail to advance within a year. This may be due to the fact that outside of construction, there are few opportunities to learn bricklaying. Further, many workers have been upgraded from laborer to helper (hodcarrier) positions (see table 40), and it takes some time to learn to use the trowel properly.

In summary, many factors are involved in determining the length of time spent at a trade before a worker attains journeyman status. The union may impose experience requirements. The trade may take a long time to learn, or the worker could simply have worked in an open shop for several years before being approached by the union.

Union Entry Requirements for Journeymen Who Have Entered through Nonapprenticeship Routes

Tables 43-48 detail the entry requirements mentioned by nonapprenticeship groups in our interviews.

Because of lapses of memory and refusals to answer, the response rate of these questions is lower than for some other questions. In some cases, moreover, respondents may not have known the facts. For example, if a man is accepted at age 25, he may not know whether his application would be accepted or rejected if he were 29. Finally, the responses vary a good deal by trade.

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[7]Apprenticeship programs in the pipe trades run 5 years.

TABLE 42. TIME SPENT IN UNION BEFORE REACHING CURRENT JOURNEYMAN CLASSIFICATION, BY TRADE: NONAPPRENTICESHIP GROUP
[Percent distribution]

Years	Bricklayers	Carpenters	Electricians	Ironworkers	Plumbers & Pipefitters	Sheet Metal Workers	All trades
Less than 1 year	66	73	47	68	79	83	70
1 year		3	9	6	3	6	5
2 years	9	11	6	13	7	7	9
3 years	9	5	10	7	4	0	6
4 years	11	5	13	2	2	1	5
5 to 10 years	5	2	9	4	4	3	4
11 years or more	0	1	6	1	0	0	1
Total respondents	44	185	68	134	92	69	592

NOTE: Percentages may not add to 100 percent because of rounding.

SOURCE: Interviews with construction journeymen.

TABLE 43. UNION ENTRY REQUIREMENTS AS APPLIED TO AND REPORTED BY INTERVIEWED JOURNEYMEN ENTERING THROUGH NONAPPRENTICESHIP ROUTES: BRICKLAYERS

Local unions	Age requirements: Minimum	Age requirements: Maximum	Education requirements	Years of experience required	Probationary period required	Test: Type	Test: Subject	Test: Coverage	Number of vouchers required	Vote of membership	Interview	Fee
Bricklayers Local 55 (Columbus)	None (9) 16 11	None (1) 25 (1)	None (10) High school (1)	None (9) 4 years (2)	None (6) 6 mos. (1) Yes, unspecified (1)	None (7) Yes, unspecified (2) Practical (2)	Over trade (1)	Whole trade (1) Specialty (1)	None (1) Two vouchers (10) Three vouchers (1)	None (5) Yes (6)	None (9) Yes (1)	None (1) $51-75 (3) 76-100 (2) 101-125 (1) 126-150 (4) 151-175 (1) [illegible] respecti[illegible] (1)
Bricklayers Local 15 (Jackson)	None (6)	None (6) 21 (1) 24 (1)	None (8)	None (7) Yes, unspecified (1)	None (8)	None (6) Yes, unspecified (1) Written, oral, & practical (1)			One voucher (1) Two vouchers (4) Three vouchers (3)	None (7) Yes (1)	None (8)	1-25 (1) 101-125 (2) 126-150 (2) Yes, unspecified (2)
Bricklayers Local 8 (Oakland)	None (4)	None (2) 28 (1)	None (5)	None (4)	None (4) 2 mos. (1)	None (1) Written (1) Practical (4)	Over trade (5)	Whole trade (3) Specialty (1)	None (1) One voucher (1) Two vouchers (4)	None (4) Yes (2)	None (4)	None (1) 76-100 (1) 176-200 (1)
Bricklayers Local 7 (San Francisco)	None (6)	25 (1)	None (7)	None (7)	None (7)	None (1) Practical (5) Written & practical (1)	Over trade (5) Over trade & aptitude (1)	Whole trade (5) Specialty (1)	One voucher (1) Two vouchers (6)	None (4) Yes (3)	None (4) Business agent (3)	51-75 (1) 126-150 (1) 151-175 (1) 226-250 (1) Yes, unspecified (2)

NOTE: Numbers in parentheses indicate number of respondents.

SOURCE: Interviews with construction journeymen.

TABLE 44. UNION ENTRY REQUIREMENTS AS APPLIED TO AND REPORTED BY INTERVIEWED JOURNEYMEN ENTERING THROUGH NONAPPRENTICESHIP ROUTES: CARPENTERS

Local unions	Age requirements: Minimum	Age requirements: Maximum	Education requirements	Years of experience required	Probationary period required	Test: Type	Test: Subject	Test: Coverage	Number of vouchers required	Vote of membership	Interview	Fee
Carpenters District Council (Chicago)	None (4) 18 (10)	None (16)	None (7) Yes, unspecified (1) 3 yrs., high school (4) 2 yrs., high school (1)	None (11) 2 years (1)	None (13) Yes, unspecified (3) Less than 4 weeks (1) 3 months (1) 6 months (1) 37-48 mos. (1)	None (5) Yes, unspecified (2) Written (9) Oral (5) Written & oral (3)	Trade (16)	Whole trade (1)	None (10) Yes, unspecified (4) One voucher (4) Two vouchers (1) Current employer (5)	None (7) Yes (16) Executive Board only (1)	None (4) Yes, unspecified (18)	None (1) $26-50 (1) 51-75 (1) 76-100 (1) 125-150 (4) 176-200 (5) 201-225 (2) 226-250 (1) 251-275 (1) 276-300 (1) Yes, unspecified (1)
Carpenters Local 200 (Columbus)	None (9) 18 (2) 21 (1)	26 (1) 27 (2)	None (11) High school (3)	None (3) Yes, unspecified (3) 4 years (6) 5 or more years (1)	None (8) Less than 4 weeks (4) 2 mos. (1) 3 mos. (1) 6 mos. (1)	None (3) Yes, unspecified (2) Written (6) Oral (5) Written, oral, & practical (1) Written & oral (2)	Trade (7)	Whole trade (8) Specialty (1)	None (9) Yes, unspecified (2)	None (2) Yes (13)	None (5) Yes, unspecified (11)	1-25 (2) 26-50 (2) 51-75 (3) 76-100 (1) 101-125 (5) 151-175 (1) 176-200 (1) 226-250 (1)
Carpenters District Council (Houston)	None (23) 17 (1) 18 (1) 21 (1) 24 (1) 25 (1)	None (8) 25 (2)	None (27) High school (1)	None (23) Yes, unspecified (1) 3 years (2) 4 years (1) 5 or more years (1)	None (43) Yes, unspecified (2)	None (6) Written (8) Oral (18) Written, oral, & practical (6) Written & oral (8)	Trade (25) Aptitude (3)	Whole trade (22) Specialty (1)	None (29) Yes, unspecified (2) One voucher (2) Two vouchers (10) Current employer (1)	None (5) Yes (39)	None (15) Yes, unspecified (16) Examining Board (10)	None (2) 1-25 (1) 26-50 (11) 51-75 (2) 76-100 (5) 101-125 (6) 126-150 (3) 151-175 (3) 176-200 (1) 226-250 (1) 276-300 (3) Yes, unspecified (5)
Carpenters Local 1471 (Jackson)	None (8) Yes, unspecified (1)	None (3) 26 (1) 16 (1) 18 (1) 26 (1)	None (16)	None (8) Yes, unspecified (3) Less than 1 year (1) 3 years (1) 4 years (1) 5 or more years (1)	None (17) Yes, unspecified (1)	None (13) Written (1) Oral (4)	Trade (4) Trade & aptitude (1)	Whole trade (5)	None (9) Yes, unspecified (1) Two vouchers (5) Three vouchers (2) Four to five vouchers (1)	None (3) Yes (14)	None (3) Yes, unspecified (15)	None (1) 1-25 (3) 25-50 (3) 51-75 (1) 76-100 (3) 101-125 (2) 126-150 (2) 151-175 (1)
Carpenters District Council (Bay Area)	None (25) 16 (1) 18 (4)	None (19) 24 (1) 26 (1) 27 (1) 28 (1)	None (29) Yes, unspecified (1) High school (3) 3 yrs., high school (1)	None (34) Yes, unspecified (6) 2 years (1) 4 years (2)	None (29) Yes, unspecified (5) 12 months (1)	None (11) Yes, unspecified (1) Oral (5) Written (7) Written, oral, & practical (1) Written & oral (3) Oral & practical (1) Practical (4)	Trade (19) Trade & aptitude (1)	Whole trade (15) Specialty (1)	None (25) Yes, unspecified (2) One voucher (4) Two vouchers (1) Three vouchers (2) Current employer (1)	None (18) Yes (14)	None (3) Yes, unspecified (11) Examining board (6) Business agent (15)	None (1) 26-50 (3) 51-75 (1) 76-100 (4) 101-125 (1) 126-150 (3) 151-175 (2) 176-200 (6) 201-225 (2) 226-250 (4)

NOTE: Numbers in parentheses indicate number of respondents.

SOURCE: Interviews with construction journeymen.

TABLE 45. UNION ENTRY REQUIREMENTS AS APPLIED TO AND REPORTED BY INTERVIEWED JOURNEYMEN ENTERING THROUGH NONAPPRENTICESHIP ROUTES: ELECTRICIANS (IBEW)

Local unions	Age requirements: Minimum	Age requirements: Maximum	Education requirements	Years of experience required	Probationary period required	Test: Type	Test: Subject	Test: Coverage	Number of vouchers required	Vote of membership	Interview	Fee
IBEW Local 595 (Oakland)	None (20)	None (20)	None (17) High school (1)	None (7) Yes, unspecified (6) 4 years (5)	None (17) 6 mos. (2) 1-2 years (1)	None (7) Written (7) Written, oral, & practical (1) Written & oral (7)	Over trade (9) Trade & aptitude (6)	Whole trade (13) Specialty (2)	None (15) Yes, unspecified (4) One voucher (3)	None (8) Yes (7) Executive Board only (5)	None (4) Yes, unspecified (7) Executive Board (6) Business agent (1)	None (2) $1-25 (1) 26-50 (8) 51-75 (1) 76-100 (8) 101-125 (1) Yes, unspecified (1)
IBEW Local 6 (San Francisco)	None (12) 16 (1) 21 (1)	None (5) 28 (1)	None (11) High school or GED (1) High school (3) Yes, unspecified (1)	None (12) Yes, unspecified (3) 1 year (2) 2 years (1)	None (11) 3 mos. (1) 6 mos. (1) 12 mos. (1) 13-24 mos. (1) 25-36 mos. (1) 48-60 mos. (1) Yes, unspecified (1)	None (7) Written (4) Written & oral (6) Oral (1) Practical (1)	Over trade (12)	Whole trade (10) Specialty (1)	None (11) Yes, unspecified (2) One voucher (5)	None (9) Yes (9)	None (4) Examining board (4) Executive Board (2) Yes, unspecified (8)	1-25 (3) 26-50 (1) 51-75 (4) 76-100 (5) 101-125 (1) 176-200 (1) 226-250 (1) 501 or more (1) Yes, unspecified (2)
IBEW Local 716 (Houston)	18 (2)	24 (1)	None (1)	None (2)	None (3) Yes, unspecified (1)	None (1) Yes, unspecified (2) Written (4)	Trade (2)	Whole trade (6)	None (4)	None (1) Yes (6)	None (4)	26-50 (1) 76-100 (2) Yes, unspecified (14)
IBEW Local 480 (Jackson)	18 (2)	25 (1) 26 (1)	None (1) High school (5)	None (3) 2 years (1)	None (8) 12 mos. (2)	None (2) Written (6)	Trade (1)	Whole trade (7)	None (5) Yes, unspecified (2) Two vouchers (1)	Yes (10)	None (4) Yes, unspecified (3) Executive Board (2)	51-75 (3) 76-100 (5) 101-125 (1) Yes, unspecified (1)

NOTE: Numbers in parentheses indicate number of respondents.

SOURCE: Interviews with construction journeymen.

TABLE 46. UNION ENTRY REQUIREMENTS AS APPLIED TO AND REPORTED BY INTERVIEWED JOURNEYMEN ENTERING THROUGH NONAPPRENTICESHIP ROUTES: IRONWORKERS

Local unions	Age requirements: Minimum	Age requirements: Maximum	Education requirements	Years of experience required	Probationary period required	Test: Type	Test: Subject	Test: Coverage	Number of vouchers required	Vote of membership	Interview	Fee
Ironworkers Local 469 (Jackson)	None (3) 18 (2) 21 (1)	–	None (5)	None (2) Yes, unspecified (2) Two years (1) Three years (1)	None (9) 6 mos. (1)	None (2) Written (1) Oral (3) Written, oral, & practical (1) Written & oral (2) Oral & practical (1)	Trade (8)	Whole trade (8)	None (3) Yes, unspecified (1) One voucher (1) Two vouchers (1) Three vouchers (2) Four-five vouchers (1)	None (2) Yes (5)	None (2) Yes, unspecified (6) Executive Board (1) Business agent (1)	$1-25 (2) 101-125 (4) 126-150 (1) 301-325 (1) 351-375 (1) 376-400 (1)
Ironworkers Local 378 (Oakland)	None (7) 18 (5) 30 (3)	24 (1) 28 (1) 30 (3)	None (21) High school (2)	None (13) Yes, unspecified (5) Two years (2)	None (20) 6 mos. (3)	None (1) Oral (6) Written, oral, & practical (2) Written & oral (1) Written & practical (1) Oral & practical (5) Practical (8)	Trade (20)	Whole trade (8) Specialty (12)	None (4) Yes, unspecified (1) One voucher (1) Two vouchers (10) Three vouchers (7)	None (12) Yes (10) Executive Board only (1)	None (3) Yes, unspecified (8) Examining board (7) Executive Board (6)	1-25 (10) 26-50 (20) 101-125 (3) 126-150 (2) 151-175 (1) 276-300 (2) 326-350 (1) 476-500 (1) Yes, unspecified (1)
Ironworkers Local 377 (San Francisco)	None (10) 18 (3)	None (12) 26 (1)	None (16) High school (2) High school or GED (1)	None (14) Yes, unspecified (2) 5 or more years (2)	None (11) 2 mos. (1) 5 mos. (1) 13-24 mos. (1) 48-60 mos. (1) Yes, unspecified (1)	None (5) Written (2) Written & practical (3) Written & oral (1) Oral (4) Practical (1) Yes, unspecified (2)	Trade (7) Aptitude (2)	Whole trade (7) Specialty (3)	None (12) One voucher (3) Two vouchers (3)	None (10) Yes (6)	None (3) Yes, unspecified (6) Business agent (2) Examining board (7)	1-25 (5) 26-50 (1) 51-75 (1) 76-100 (2) 276-300 (5) [illegible]-350 (2) Yes, unspecified (1)
Ironworkers Local 1 (Chicago)	–	21 (1)	None (2)	None (1) Yes, unspecified (1)	None (2)	Oral & practical (2)	Trade (2)	Whole trade (2)	Two vouchers (2)	None (1) Yes (1)	None (1) Examining board (1)	26-50 (1) 76-100 (1)
Ironworkers Local 172 (Columbus)	None (7) 18 (7)	None (8) 25 (1) 27 (1)	None (6) High school (8)	None (7) Two years (1) Three years (2) Four years (4)	None (7) Less than 1 month (1) 3 mos. (1) 6 mos. (1) 1-2 years (3) 3-4 years (1)	None (2) Yes, unspecified (1) Written (7) Oral (2) Written & Oral (1)	Trade (1) Aptitude (1)	Whole trade (4) Specialty (4)	None (1) One voucher (1) Two vouchers (8)	None (6) Yes (7)	None (1) Yes, unspecified (11) Examining board (1)	1-25 (1) 26-50 (1) 76-100 (4) 176-200 (1) 276-300 (3) 301-325 (1) 326-350 (2)
Ironworkers Local 84 (Houston)	None (4) 18 (6) 20 (1) 21 (3)	25 (3) 29 (1) 31 (1) 40 (1)	None (10) High school (3)	None (11)	None (11) 3 mos. (1) 6 mos. (1) Yes, unspecified (2)	None (7) Yes, unspecified (2) Written (4) Oral (3) Written, oral, & practical (1) Written & oral (1) Written & practical (2) Oral & practical (3)	Trade (2) Aptitude (2)		None (1) Yes, unspecified (1) One voucher (1) Two vouchers (6)	Yes (21) Executive Board (1)	None (2) Yes, unspecified (21) Examining board (1)	1-25 (9) 76-100 (1) 101-125 (2) 151-175 (1) 176-200 (1) 201-225 (1) 276-300 (1) 326-350 (1) Yes, unspecified (9)

NOTE: Numbers in parentheses indicate number of respondents.

SOURCE: Interviews with construction journeymen.

TABLE 47. UNION ENTRY REQUIREMENTS AS APPLIED TO AND REPORTED BY INTERVIEWED JOURNEYMEN ENTERING THROUGH NONAPPRENTICESHIP ROUTES: PLUMBERS AND PIPEFITTERS

Local unions	Age requirements		Education requirements	Years of experience required	Probationary period required	Test			Number of vouchers required	Vote of membership	Interview	Fee
	Minimum	Maximum				Type	Subject	Coverage				
Plumbers Local 130 (Chicago)	None (2) 18 (1) 21 (1)	–	None (3) High school (2)	None (3) Yes, unspecified (2) Less than 1 year (1)	None (5) 6 mos. (1) 1 year (1) 1-2 years (1)	Written (3) Written, oral, & practical (1) Written & practical (3) Oral & practical (1) Practical (1)	Trade (6)		None (4) One voucher (3) Three vouchers (1) Six to ten vouchers (1)	None (5) Yes (1) Executive Board (1)	Yes, unspecified (6) Examining board (2) Executive board (1)	$51-75 (1) 276-300 (1) 476-500 (5) 501 or more (5) Yes, unspecified (1)
Plumbers Local 189 (Columbus)	None (5) 19 (1)	26 (1)	None (4) High school (3)	5 or more years (6)	None (3) 6 mos. (2) 9 mos. (1) 12 mos. (1)	Written (8) Written & practical (1) Practical (1)	Trade (3) Aptitude (1)		None (1) One voucher (1) Two vouchers (3) Three vouchers (1) Six to ten vouchers (1)	Yes (7)	None (1) Yes, unspecified (5)	1-25 (2) 76-100 (1) 126-150 (2) 301-325 (1) 326-350 (1) 501 or more (3)
Plumbers Local 68 (Houston)	18 (1) 21 (1)	21 (2)	High school (3)	None (2) 5 or more years (8)	None (7) 6 mos. (5)	None (2) Written (3) Written & practical (7) Practical (1)	Trade (9)		None (2) Yes, unspecified (1) One voucher (10)	None (1) Yes (11)	None (1) Yes, unspecified (9) Examining board (1) Executive Board (2)	1-25 (4) 126-150 (6) 176-200 (1) 226-250 (1)
Pipefitters Local 211 (Houston)	18 (21) 21 (1)	21 (1) 25 (11)	High school (20)	None (22)	None (17) 6 mos. (7)	None (12) Written (9) Oral (1) Written, oral & practical (1) Written & oral (1) Written & practical (3)	Trade (7) Aptitude (2) Trade & aptitude (3)		None (12) Yes, unspecified (1) One voucher (2) Three vouchers (9) Six to ten vouchers (1)	None (2) Yes (25)	None (1) Yes, unspecified (16)	1-25 (2) 26-50 (2) 51-75 (2) 76-100 (2) 101-125 (1) 126-150 (3) 175-200 (4) 201-225 (2) 226-250 (1) 301-325 (2) 476-500 (1) 501 or more (1) Yes, unspecified (4)
Plumbers Local 681 (Jackson)	–	–	–	5 or more years (6)	None (11) 1 year (1) 2-3 years (1)	None (2) Written (5) Oral (1) Written & oral (1) Written & practical (3) Practical (1)	Trade (6)		None (2) Yes, unspecified (1) One voucher (5) Three vouchers (3)	None (1) Yes (12)	None (8) Yes, unspecified (4)	1-25 (1) 26-50 (3) 76-100 (1) 101-125 (4) 126-150 (2) 151-175 (1) 201-225 (1)
Plumbers Local 444 (Oakland)	None (8) 21 (1)	26 (11)	None (9) High school (2) 3 yrs., high school (1)	None (7) 3 years (1) 4 years (1) 5 or more years (1)	None (9) 1 year (2) yes, unspecified (1)	None (3) written (6) Oral (2) Written, oral & practical (1) Written & practical (1)	Trade (6) Aptitude (1)		None (6) Yes, unspecified (2) One voucher (2) Two vouchers (1)	None (3) Yes (6) Executive Board (1)	None (5) Yes, unspecified (4) Executive Board (1)	1-25 (1) 26-50 (2) 51-75 (1) 101-125 (1) 176-200 (2) 201-225 (1) 226-250 (1) 476-500 (1) 501 or more (2) Yes, unspecified (1)

NOTE: Numbers in parentheses indicate number of respondents.

SOURCE: Interviews with construction journeymen.

TABLE 48. UNION ENTRY REQUIREMENTS AS APPLIED TO AND REPORTED BY INTERVIEWED JOURNEYMEN ENTERING THROUGH NONAPPRENTICESHIP ROUTES: SHEET METAL WORKERS

Local unions	Age requirements		Education requirements	Years of experience required	Probationary period required	Test			Number of vouchers required	Vote of membership	Interview	Fee
	Minimum	Maximum				Type	Subject	Coverage				
Sheet Metal Workers Local 98 (Columbus)	None (10) 18 (1) 19 (1)	None (10) 25 (1) 28 (1)	None (8) High school (5)	None (5) Yes, unspecified (1) 4 years (5) 5 or more years (1)	None (10) 3 mos. (2) Yes, unspecified (1)	None (6) Yes, unspecified (5) Practical (2)	Trade (1) Aptitude (1)	Whole trade (1) Specialty (3)	None (5) Yes, unspecified (3) One voucher (1) Two vouchers (4) Three vouchers (1)	None (7) Yes (6)	None (4) Yes, unspecified (10)	None (1) $1-25 (1) 151-175 (2) 226-250 (1) 251-275 (1) 351-375 (3) 426-450 (4) Yes, unspecified (1)
Sheet Metal Workers Local 54 (Houston)	None (8) 18 (1) 25 (2)	None (7)	None (7) High school (2) High school or GED (1)	None (10) Less than 1 year (1)	None (15) 6 mos. (1)	None (16) Yes, unspecified (2) Written (7) Oral (3) Written & oral (1)	Trade (5) Aptitude (2) Trade & aptitude (1)	Whole trade (6)	None (8) Yes, unspecified (1) One voucher (3) Three vouchers (3)	None (2) Yes (14)	None (4) Yes, unspecified (8) Executive Board (5)	26-50 (1) 101-125 (3) 126-150 (3) 151-175 (3) 176-200 (1) 201-225 (1) 226-250 (1) 251-275 (1) 326-350 (1) 376-400 (1) 401-425 (2) 426-450 (1) 501 or more (1) Yes, unspecified (4)
Sheet Metal Workers Local 216 (Oakland)	None (24) Yes, unspecified (1)	None (25)	None (24) Yes, unspecified (1)	None (4) Yes, unspecified (21)	None (23) Yes, unspecified (1)	Yes, unspecified (1) Written, oral & practical (12) Written & practical (12) Oral & practical (2) Practical (7)	Trade (18) Aptitude (1) Trade & aptitude (1)	Whole trade (18) Specialty (4)	None (25)	None (25)	Yes, unspecified (25)	275-300 (1) 476-500 (16) Yes, unspecified (1)

NOTE: Numbers in parentheses indicate number of respondents.

SOURCE: Interviews with construction journeymen.

Bricklayers. The four locals surveyed tend to have few age requirements (although four respondents mentioned maximums ranging from 21 to 28), no education requirements, and few experience requirements (only 4 of 27 respondents mentioned any). A short probation period appears to have been used only occasionally in Columbus (6 months) and Oakland (1 year). The bricklayers used few exams and even these were likely to be practical tests of ability to perform trade tasks. The bricklayers relied largely on vouchers, two being the usual number required. Vouchers are usually provided by other journeymen, although former or current employers often vouched for journeymen. Interviews were not required (except for one case in Columbus). Votes of the membership were often required, however. Only the local in Jackson did not take such votes. Fees charged by bricklayer locals were among the lowest of any of the unions studied.

Carpenters. More variation in requirements was found among the five carpenters' local jurisdictions studied than among the bricklayers. Age requirements were not used much by carpenters' locals. Similarly, with the exception of locals in Columbus and Chicago, there were no educational requirements.

Experience requirements were rare in Chicago, Houston, and the Bay Area, but they were applied to at least half of the respondents in Jackson and Columbus. Probationary periods were commonly used only in Chicago and Columbus. Testing, when used, generally consisted of oral and/or written exams covering the trade. Vouchers were required irregularly and even then only one or two usually were required. Interviews, usually with an examining board or the business agent, were common, and fees charged ranged from zero to over $200.

Electricians. Of the four IBEW locals surveyed, two regularly imposed maximum and minimum age requirements. In addition, the San Francisco local used a minimum age cutoff of 16. Only the Jackson local (where a high school diploma was required) imposed minimum education requirements. There were experience requirements in every place but Houston.

Probation was used occasionally by all IBEW locals. Written exams covering the whole trade ordinarily were required. Vouchers were required of respondents in three of the four locals. Membership votes and interviews with the executive board were common requirements. Fees charged by IBEW locals ranged from zero to over $200, although these locals usually charged lower fees than most of the other unions studied.

Ironworkers. Age maximums for ironworkers ranged from 21 to 40; minimums ranged from 18 to 30. The Oakland local had a minimum age requirement of 30 for direct journeyman admission, which also was the maximum age for the apprentices.

The local had been attempting to require nonapprentices to be older than the commonly apprenticeable age.

Ironworkers had educational requirements in Columbus and to a lesser extent in Houston and Oakland, but not in Chicago or Jackson. Experience requirements were imposed everywhere except Houston, Chicago, and Jackson. Probationary periods were not used very much except in Columbus. A variety of general and specialty trade tests were common among ironworkers. All locals used vouchers; the most common number being two, although in Jackson five were required.

A vote of the membership was required of all respondents in Houston, and a strong majority of respondents mentioned membership votes in Jackson, but only about half of the interviewees in Columbus, Oakland, and Chicago and somewhat fewer than half in San Francisco noted membership votes as a requirement. Interviews generally were required with either the business agent, the executive board, or the examining board. Fees varied widely.

Plumbers and Pipefitters. There was a wide variation in age requirements in the pipe trades, the largest numbers of respondents reporting none. Educational requirements, particularly high school graduation were regularly required in all locals except Oakland, and were the highest of any union studied. Probationary periods also were used in all locals.

Written and practical tests were commonly required by plumbers' locals. Vouchers also were often used. Three vouchers were most commonly required, but the number ranged up to 10. Membership votes were generally required, as were interviews -- usually with the examining board or executive board. Initiation fees in the pipe trades were among the highest of any of the unions studied.

Sheet Metal Workers (SMW). Of the three SMW locals studied, age requirements were applied to more than one respondent only in Columbus and Houston. Education requirements -- generally high school graduation -- were also required of respondents in Columbus and Houston but not in Oakland. Experience requirements, generally 4 years at the trade, were found in Columbus and Oakland but not in Houston. Probation requirements were used in all locals, but only in a few cases.

Trade examinations were required by SMW interviewees in Oakland, Houston, and Columbus. Oral, written, and practical forms were used in Oakland, whereas written and oral exams were mentioned in Houston; only a practical test was mentioned in Columbus. In Houston, the tests covered the whole trade,

whereas in Columbus and Oakland some examinees were tested only on their specialties.

Vouchers were required of about half the SMW respondents in Columbus and Houston, but no vouchers were required in Oakland. A vote of the membership was often required in Houston, more seldom in Columbus, and not at all in Oakland. Generally, interviews were required everywhere. Fees charged were among the highest of any of the unions studied.

Summary

Significant variations were found in entry requirements between and even within locals. Although patterns have developed in trade, there is considerable flexibility within these patterns.

Age Requirement. Maximum age requirements for nonapprentice entrants were not mentioned by any of the business agents interviewed. Further, in only five locals -- three ironworkers', one plumbers', and one sheet metal workers' -- did the business agents mention any minimum age requirements for journeymen who enter through nonapprenticeship routes. Results from the journeyman interviews indicated age requirements on an irregular basis among all ironworkers' locals, two sheet metal workers' locals, two electricians' locals, and on an occasional basis among several plumbers' and carpenters' locals. In summary, age requirements certainly have not been rigid for any of the trades. They were most often imposed among ironworkers, but even there, 23 percent of nonapprenticeship journeymen were over 30 years old (see table 49). In other trades, the percentages were significantly higher.

Education Requirement. Although none of the business agents we interviewed listed educational requirements for entry into their unions, education was mentioned as an entry requirement by some journeymen. The journeymen noted considerable variation in requirements by trade, by local, and even within a given local. Educational requirements were generally not used by the bricklayers at all, but were mentioned infrequently in two of five carpenters' locals, and in only one of these was a high school diploma required. A high school diploma was required less than half of the time by interviewees in two ironworkers' locals, more than half the time in one local, and not at all in three locals.

A high school diploma was a prevalent requirement in only one of four IBEW locals studied but was required in two of six pipe trades locals, occasionally in three others, and not at all in one. High school graduation was required of fewer than

TABLE 49. AGE AT UNION ENTRY, BY TRADE: NONAPPRENTICESHIP GROUP

Age	Bricklayers	Carpenters	Electricians	Ironworkers	Plumbers & Pipefitters	Sheet Metal Workers	Total, all trades
Percent 25 years or under	44	40	42	57	27	47	43
Percent 30 years or under	73	62	68	77	52	68	66
Percent over 30 years	27	38	32	23	48	32	34
Oldest union entrant	46	56	52	51	58	50	58
Mean average age at entry	26.7	28.8	28.1	26.4	31.4	27.6	28.3
Total respondents	48	192	74	137	98	73	622

SOURCE: Interviews with construction journeymen.

half the sheet metal respondents. Thus, there has been much flexibility in educational requirements for informally trained journeymen. An average of only 58 percent of informally trained journeymen had completed high school, the proportions ranging from 48 percent in bricklaying to 76 percent in electrical work (see table 34).

Experience Requirement. The responses of journeymen and business agents differed more on this requirement than any other. In three carpenters' locals, two electricians' locals, four pipe trades' locals, and two sheet metal workers' locals, business agents said that 4 or 5 years of experience were required of nonapprentices, whereas several journeymen in the same locals said they had joined with less experience or none at all.

On the other hand, in one ironworkers' local and one electricians' local, journeymen said they had faced stiffer experience requirements than currently required according to the business agent. Apparently, this requirement has changed a great deal over time or is subject to great flexibility in interpretation.

Probationary Period. In none of the locals studied was a probationary period a universal requirement. However, probation, usually ranging up to 1 year, was used infrequently in all electricians', plumbers', and sheet metal workers' locals, several ironworkers' locals, two bricklayers' locals, and two carpenters' locals. Probation was required more often than the Columbus sheet metal workers' and plumbers' business agent reported, but less often than the Chicago ironworkers and the San Francisco electricians indicated (see Chapter III). In summary, it appears that the probation requirement also has been flexibly applied.

Testing. Usually, the business agents (see Chapter III) and journeymen reported the same kinds of tests. However, in almost every local a variety of tests was used. Almost every local apparently has experimented with several test procedures for journeyman status, and most have developed a procedure locally. The union with the most standard procedures was the bricklayers', which used a practical test on the job judged by two journeymen who vouched for the candidate.

Vouchers. Although vouchers were required for all trades, the pattern varied by craft. Bricklayers almost universally required two vouchers, although one journeyman respondent apparently needed no voucher, and a handful of others reported requirements of either one or three vouchers. Electricians apparently have used vouchers less than any trade studied, although vouchers were required of a sprinkling of interviewees in three of the four IBEW locals studied.

The pipe trades had the most stringent voucher requirements, with some locals requiring more than six vouchers. However, at least one interviewee in every pipe trades' local studied entered without a voucher requirement. In carpentry, ironwork, and sheet metal work, a voucher requirement was applied to at least one respondent in every local except sheet metal workers in Oakland.

In ironwork, plumbing, and sheet metal work, voucher requirements reported by journeymen were generally stiffer than those reported by business agents, probably because voucher requirements have diminished in importance in recent years as the incidence of testing has risen.

Vote of Membership. Like voucher requirements, membership vote requirements were common -- although not universal -- in every trade studied. However, this requirement has declined in use in recent years, and several business agents reported no vote requirement in 1971-72, whereas several members of the same locals stated that their admission had been subject to such a vote.

Interviews. The use of interviews is increasing and is common -- although not universal -- in every trade except bricklaying. Interviews are generally conducted with either the business agent, the union executive committee, or an examining board especially established to evaluate nonapprenticeship applicants. Business agents in all but two locals listed interviews among the 1971-72 union requirements; yet several journeymen reported that they were not interviewed.

There was one major inconsistency in the data from the Columbus ironworkers: whereas the business agent reported that no interview was required of members, 12 of 13 respondents in his local reported that they had been interviewed.

Fees. Initiation fees were highest among plumbers and sheet metal workers and lowest among bricklayers and electricians. Information from business agents regarding initiation fees generally coincided with data obtained from journeymen (although, of course, the fees reported by business agents were near the upper end of the range since fees have risen over the years).

Conclusion

With some major exceptions, there is agreement between the 1971-72 entry standards described by business agents and the admission requirements applied to journeymen interviewed. The greatest exceptions include data regarding experience requirements (which have become increasingly rigorous through time), vouchers and votes of the membership (which are currently less often

required than in the past), and testing (which has taken a variety of forms over time). Unfortunately, we are unable to determine the extent to which these differences are due to changing requirements through time or failure to follow the prescribed requirements at any given time.

Certain locals seem to maintain more rigid or formal standards than others. For example, the responses from interviewees in the Oakland sheet metal local were more consistent (except with respect to testing) than answers given by respondents in other sheet metal locals. However, the locals imposing a wide range of requirements far outnumber those where requirements have varied only narrowly.

Typical Nonapprenticeship Paths to Journeyman Status

There are several admission paths to journeyman status in the building trades unions, including:

(1) Direct admission. This route normally requires standards such as those outlined in tables 43-48. The strictness of the standards varies with local labor market conditions or the circumstances under which a worker is admitted.

One of the most common forms of direct admission is when a nonunion firm is organized. Sometimes the admission standards applied to candidates in this situation are not as rigorous as under other conditions. However, at times, workers thus organized are not given full standing in the union. If a local faces tough competition from another union, it will be more willing to accept informally trained members.

Sometimes a worker can gain admission on the basis of specialty skills. A worker knowing welding, for example, may be admitted to ironworkers' or sheet metal locals.

(2) Joining the union in a nonapprenticeable branch and then becoming upgraded into the construction or "uptown" branch. Often a local will have various branches. For example, an IBEW local may have branches for marine work, electric streetcar or bus maintenance, neon signs, and/or motor shops. Plumbers', ironworkers', and sheet metal locals may have branches for shop or production work. Nonconstruction branches often do not have apprenticeship programs and are easier to enter than construction branches. When the construction market is good, men from other branches can work "uptown," thus gaining experience and knowledge to pass a journeyman exam and transfer to the construction branch.

(3) Working on permit to gain experience, then applying for admission on the basis of this experience. Most building trades unions allow people to work on permit, usually for a fee, when the market is good.

The permit system allows unions to meet peak demands without permanently expanding their work force. Sometimes, too, permits are used for probationary periods, during which the union evaluates the applicant and the applicant decides whether or not he likes the work.

(4) Some bricklayers have entered unions on "improver" cards and have been upgraded to full journeyman status as they gained knowledge and experience at the trade. However, the issuance of improver cards seems to have been curtailed in recent years.

(5) Workers may gain skill at the trade, enter a local in a smaller town where the direct admission standards are easier, and transfer to the area where they want to work. Although influenced by market conditions, interlocal transfers of the same international are normally easy to make. Most business agents take the attitude that "if a man is a carpenter in Chicago, a man is a carpenter in Atlanta." This situation, combined with the variability in standards used for direct admission, has presented problems for some local unions. For example, in a discussion of why a majority of apprentices drop out of the Bay Area carpenters' apprenticeship program, one official lamented, "He /the apprentice/ gets halfway through the program and then goes down the road to a small local that is hungry for his initiation fee and he gets in as a full-time journeyman. Then he eventually transfers back here."[8]

(6) Upgrading through the intervention of a foreman or contractor. An exceptionally good worker employed as a hod carrier or laborer may be noticed by a foreman or contractor who personally intervenes to encourage the worker to become upgraded into a craft and to recommend him to the union.

The Future of Nonapprenticeship Routes

Although union officials have been attempting to "close the back door" to union admissions and bring everyone through apprenticeship, it is unlikely that informal routes will be abandoned altogether, because they play important roles for unions, such as organizing nonunion contractors and allowing the union to assimilate potentially competitive craftsmen. Also, in view of the difficulties of forecasting future demand for craftsmen in unstable construction markets, it is unlikely that joint apprenticeship committees will indenture sufficient apprentices to completely fill future demand for craftsmen. For fear of training mechanics who may be unemployed, JAC's

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[8]Confidential interview with an official from the Bay Area carpenters' apprenticeship program.

will continue to err on the conservative side. Understandably, since apprenticeship involves on-the-job training, jobs must be available if the program is to operate.[9] Of course, crafts like sheet metal work, electrical work, and the pipe trades, which require more formal training, are more likely to use apprenticeship than others.

Flexibility of the Entry System

An overriding impression gained from our journeymen interviews is that there is much flexibility in union entry procedures, even though on its face this system appears to be very rigid. This flexibility allows unions to adapt to changes in the construction labor market and to accommodate to various situations and circumstances.

Characteristics of Minority Journeymen Interviewed

The proportion of minorities in our interview sample is consistent with other evidence on minorities in building trades unions. Altogether, 9 percent of our interviewees were from minority groups -- black, Spanish American, American Indian, or Asian American (see table 50). Responses to supplementary questions on union membership in the March 1969 Current Population Survey found blacks to comprise 8.7 percent of membership in all construction unions[10] (see table 51).

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[9]This is not to say that efforts should not be made to improve the methods used by program sponsors to estimate the number of apprentices to be indentured each year. Much can be done to rationalize the procedures currently used. However, perfect methods will never be developed, and as long as this is true, JAC's will continue to be conservative in determining the number of apprentices to be indentured.

[10]Selected Earnings and Demographic Characteristics of Union Members, 1970 (Washington: U.S. Department of Labor, Bureau of Labor Statistics, 1972), Table B, p. 27. It should be noted that data from our interview sample and the Current Population Survey (CPS) data are not precisely comparable. CPS data refer to larger aggregations, viz, national union membership in all construction unions, not just journeymen in six selected building trades unions contract construction in six cities. Further, CPS data refer only to blacks, whereas our data include all minorities.

TABLE 50. RACIAL AND ETHNIC BACKGROUND OF JOURNEYMEN INTERVIEWED, BY TRADE[1]

Trade	Racial or ethnic origin							
	White (Anglo)	Minority		Minority				Total respondents
		Number	Percent	Black	Spanish American	American Indian	Asian American	
BRICKLAYERS	95	29	23	27	1	0	1	124
Apprenticeship graduates	64	11	15	11	0	0	0	75
Others	31	18	37	16	1	0	1	49
CARPENTERS	274	43	14	31	10	1	1	317
Apprenticeship graduates	111	12	10	9	2	1	0	123
Others	163	31	16	22	8	0	1	194
ELECTRICIANS	163	7	5	3	2	0	2	170
Apprenticeship graduates	92	3	3	0	2	0	1	95
Others	71	4	5	3	0	0	1	75
IRONWORKERS	180	6	3	5	1	0	0	186
Apprenticeship graduates	44	2	4	2	0	0	0	46
Others	136	4	3	3	1	0	0	140
PLUMBERS & PIPEFITTERS	239	17	7	16	1	0	0	256
Apprenticeship graduates	154	4	3	4	0	0	0	158
Others	85	13	13	12	1	0	0	98
SHEET METAL WORKERS	161	8	5	3	2	0	3	169
Apprenticeship graduates	91	6	6	3	1	0	2	97
Others	70	2	3	0	1	0	1	72
ALL TRADES	1,112	110	9	85	17	1	7	1,222
Apprenticeship graduates	556	38	6	29	5	1	3	594
Others	556	72	11	56	12	0	4	628

[1] All persons interviewed were male.

SOURCE: Interviews with construction journeymen.

TABLE 51. PARTICIPATION OF BLACKS IN LABOR UNIONS BY INDUSTRY FOR THE UNITED STATES, 1970

Industrial sector of longest job held in 1970	Percentage of Blacks		RATIO:[1] Percentage of Blacks in Union / Percentage of Blacks Not in Union
	In labor unions	Not in labor unions	
Mining	4.9	4.3	1.14
Construction	8.7	11.2	.78
Manufacturing	12.4	9.8	1.27
Transportation, communication and public utilities	10.3	11.1	.93
Wholesale trade	11.9	7.6	1.57
Retail trade	9.7	7.9	1.23
Services and financial	18.6	13.5	1.38
Public administration	16.5	11.8	1.40

[1] A ratio equal to one would indicate that there is the same proportion of blacks in the unionized sector as in the nonunion sector. A ratio greater than one indicates that blacks are represented in greater proportion in unionized work than in nonunion work; and a ratio less than one indicates that blacks are represented in lesser proportions in the unionized sector than in the nonunion sector of the industry.

The table shows that blacks are overrepresented in all but two industrial sectors—construction and transportation-communication-public utilities. Of these two, the underrepresentation of blacks is worse in construction.

SOURCE: Calculated from data contained in U.S. Department of Labor, Bureau of Labor Statistics, *Selected Earnings and Demographic Characteristics of Union Members, 1970*, BLS Report 417 (Washington: Government Printing Office, 1972), table 13, page 27.

The minorities in our sample were largely concentrated in the bricklayers (23 percent) and carpenters (14 percent). In agreement with Equal Employment Opportunity Commission EEO-3 data,[11] our interview sample showed low minority participation rates in the mechanical trades -- plumbing and pipefitting (7 percent minority), sheet metal workers (15 percent minority), electricians (5 percent minority), and ironworkers (3 percent minority).[12]

Of course, data by trade mask considerable variation in minority participation by union locals. For example, a large portion of the minority bricklayers interviewed were from a local in Jackson. Similarly, whereas several nonapprentice minority plumbers appeared in the samples from locals in Oakland and Chicago, not one minority member of a pipefitters' local was found.

In all trades studied, as table 50 illustrates, greater proportions of minorities have entered through nonapprenticeship routes than from apprenticeship programs. Overall, approximately twice as many minorities entered the trades through nonapprenticeship routes as from apprenticeship. Further, as table 52 shows, the proportion of minorities among union entrants after 1960 jumped from 6 percent to 14 percent, and nonapprenticeship routes have been a method of entry for steadily increasing the proportions of minorities over the past 30 years. Prior to 1950, only 6 percent of those admitted through nonapprenticeship routes were minorities; during the 1950's, minorities accounted for 10 percent of nonapprenticeship entrants; in the period 1960-72, they were 18 percent. This may come as a surprise to those who argue the unions have "closed the back door" to minorities. On the contrary, unions, under equal opportunity pressures, appear to have been willing to accept already trained minority craftsmen into their membership. In essence, taking in already trained craftsmen is the quickest and easiest way to meet EEO demands.

Further, sketchy evidence indicates that significant numbers of trained minority nonunion construction workers exist. Data from the Current Population Survey indicate that in 1970 greater proportions of blacks in construction worked in nonunion

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[11]See Equal Employment Opportunity Commission, "Total and Minority Membership in Referral Unions in International Union, by Sex, 1970." (Xerox compiled from EEO-3 reports available from Equal Employment Opportunity Commission, Washington, D.C., 20506.)

[12]In fact, the number of minorities in the mechanical trades portion of the sample is so small that it is insignificant. Only when the sample size exceeded 10 are data presented.

TABLE 52. PERCENTAGES OF MINORITIES AMONG UNION ENTRANTS BY PERIOD OF ENTRY, APPRENTICESHIP GRADUATES AND OTHERS, ALL TRADES

Item	Period of union entry			
	Prior to 1950	1950-1959	1960-1972	All years
Apprenticeship graduates	6	3	9	6
Others	6	10	18	11
Total	6	6	14	9

SOURCE: Interviews with construction journeymen.

jobs (relative to proportions of blacks in unions) than in any other industrial sector (see table 51). However, it is likely that the blacks in the nonunion sector are largely concentrated in the laborer jobs and trowel trades and least concentrated in the skilled trades, which also have the fewest minorities in the union sector. The fact that some unions have sought minority craftsmen is attested to by the concern nonunion minority contractors have showed concerning unions' raiding their work forces and attracting their minority workers away with higher wages.

Friends and Relatives in the Trade

As table 53 shows, in every trade, regardless of apprenticeship background, minorities were less likely than whites to have relatives or friends in the union. In addition, they were less likely than nonminorities to have fathers in the trade before entering. Minorities who entered through nonapprenticeship routes had a father in the trade about as frequently as white counterpart journeymen, but the minority fathers were generally not in the union. In marked contrast, only 13 percent of the fathers of minority apprenticeship graduates had been in the trade, whereas almost a third of their nonminority counterpart apprenticeship graduates had fathers in the trade.

In addition, a higher proportion of the minority nonapprentices than apprenticeship graduates were likely to have other relatives or friends in the trade. This indicates that whereas minority nonapprentice entrants are coming from "trade families," the minority apprenticeship graduates are coming from an altogether different family background. A possible explanation for this is that apprenticeship outreach programs, which operate in every city in which interviews were conducted, are successfully reaching a sector of the minority population previously unacquainted with construction.

Not unexpectedly, a higher proportion of apprenticeship graduates' fathers than others' fathers in the trade were union members themselves. This held for both minorities and nonminorities.

The picture is revealing and somewhat hopeful. Although minorities, by and large, have not had much contact with the informal network of friends and relatives which has worked so well to attract nonminority youth to the crafts, once minorities do enter the trades, the same patterns seem to prevail for them. Interestingly, in a followup survey of graduates of the Workers Defense League (WDL) Joint Apprenticeship Program, referrals by friends and relatives to the outreach program brought into

TABLE 53. KNOWLEDGE OF SOMEONE IN THE TRADE BEFORE ENTRY: APPRENTICESHIP GRADUATES AND OTHERS, BY TRADE AND MINORITY STATUS

Item	Apprenticeship Graduates						Others									
	Bricklayers		Carpenters		All Trades		Bricklayers		Carpenters		Plumbers & Pipefitters		All Trades	
	Minority No. %	Non-minority No. %	Minority No. %	Non-minority No. %	Minority No. %	Non-minority No. %	Minority No. %	Non-minority No. %	Minority No. %	Non-minority No. %	Minority No. %	Non-minority No. %	Minority No. %	Non-minority No. %
Father in trade	1 9	23 37	4 33	44 41	5 [illegible]	176 32	5 28	9 31	10 32	56 35	2 15	14 16	18 25	133 24
Father in trade and in union	1 9	22 35	1 8	33 31	2 5	156 28	2 11	6 21	2 6	33 21	1 8	11 13	5 7	95 17
Other relatives or friends in union	4 36	35 56	6 50	67 62	15 39	348 63	8 44	18 62	11 35	91 57	7 54	43 51	30 42	303 55
Both father and other relatives or friends in union	1 9	14 22	1 8	26 24	2 5	124 23	1 6	5 17	2 6	22 14	1 8	9 11	4 6	67 12
None of the above	7 64	19 30	3 25	28 26	20 53	158 29	7 39	8 28	15 48	44 28	6 46	38 45	33 46	193 35
Total respondents	11	63	12	108	38	550	18	29	31	160	13	85	72	548

SOURCE: Interviews with construction journeymen.

WDL offices 42 percent of the WDL-placed apprenticeship graduates. Further, 83 percent of those surveyed indicated that they had referred a friend to the WDL Joint Apprenticeship Program.[13]

Sources of Training for Minority Nonapprenticeship Union Entrants

Overall, the minority nonapprentices tend to have more training prior to union entry than do nonminorities. Proportionately, only about half as many entered the union without any prior training. Although the number of minorities is small, there are some striking indicators. For example, public vocational education (particularly in the South) has played a strong role in preparing minority bricklayer journeymen, and about one-fourth of the minority carpenters received some training in the military. (See table 54.)

Working up from the helper or laborer category plays about the same role, except in the pipe trades, where 7 of 13 minority plumbers have worked their way up to journeyman plumber.

Proportionately, fewer minorities tend to have experience in open shops, however, except in bricklaying. In the other trades, only about half as many minorities as nonminorities received training in open shops.

Advancement to Supervisory Status

Table 55 shows that except in bricklaying, minorities tend to hold supervisory positions proportionately less than nonminorities. This holds true for both apprenticeship graduates and those who enter through nonapprenticeship routes. However, minority apprenticeship graduates have a clear relative advantage over minority craftsmen who have not graduated from apprenticeship. Thirty-two percent of the minority graduates stated that they work as supervisors half or more of the time, whereas only 22 percent of the minority workers without apprenticeship indicated that they work as supervisors half or more of the time.

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[13]Material obtained from Ernest Green, Executive Director, Recruitment and Training Program, Inc.

TABLE 54. SOURCES OF TRAINING AT TRADE PRIOR TO UNION ENTRY: NONAPPRENTICESHIP ENTRANTS BY RACE

Type of training	Bricklayers				Carpenters				Plumbers & Pipefitters				All Trades			
	Minority		Nonminority		Minority		Nonminority		Minority		Nonminority		Minority		Nonminority	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Laborer or helper	8	42	15	50	13	42	72	44	7	54	27	32	32	44	180	32
On-the-job training in open shop	5	26	5	17	5	16	51	31	3	23	44	52	15	21	207	37
Public vocational education	7	37	1	3	3	10	14	9	0		7	8	13	18	45	8
Private vocational education	1	5	1	3	1	3	4	2	0		1	1	7	10	26	5
Military	0		1	3	8	26	11	7	0		4	5	9	12	39	7
Other related industry experience	0		1	3	7	23	11	61	2	15	1	1	12	16	53	10
Government training program	0		1	3	1	3	1	1	0		0		2	3	6	1
Other miscellaneous training	2	11	5	17	5	16	27	17	1	8	12	14	10	14	71	13
No prior training	1	5	6	20	3	10	24	15	2	15	8	9	6	8	90	16
Total respondents	19		30		31		163		13		85		73		555	

TABLE 55. SUPERVISORY EXPERIENCE BY MINORITY STATUS
APPRENTICESHIP GRADUATES AND OTHERS

Do you work as a foreman or superintendent? If so, about how much of the time?	Percentages of respondents-apprenticeship graduates					
	Bricklayers		Carpenters		All trades	
	Nonminority	Minority	Nonminority	Minority	Nonminority	Minority
All the time or half or more	35	36	51	33	44	32
Very little or not at all	39	27	35	58	36	55
Total respondents	62	11	111	12	550	38
	Percentages of respondents – others					
All the time or half or more	27	32	37	19	42	22
Very little or not at all	60	42	44	61	38	63
Total respondents	30	19	162	31	545	73

NOTE: Percentages do not add to 100 because the categories shown are not all inclusive.

SOURCE: Interviews with construction journeymen.

Chapter V

A COMPARISON OF APPRENTICESHIP-TRAINED JOURNEYMEN WITH JOURNEYMEN TRAINED IN OTHER WAYS

According to Foster, "While there is undoubtedly much room for improvement in the administration of apprenticeship, the system does produce a superior craftsman. Just how superior, of course, is impossible to say."[1] Foster and other writers argue, as do all of the union officials and most of the contractors' representatives we interviewed, that apprenticeship training produces better skilled, more productive, and safer craftsmen who are likely candidates for supervisory positions.

The position that apprenticeship-trained craftsmen are superior to informally trained journeymen is based on several assumptions. First, an apprenticeship-trained craftsman is a better skilled craftsman because he is a broadly trained mechanic. During apprenticeship, he has been exposed to all parts of his craft (or at least to more aspects than he was likely to learn on his own). Second, he can adapt to different job situations and changing conditions because he knows the theory underlying his work, for his apprenticeship provided him with not only on-the-job training but also related classroom instruction. He is more productive because of this knowledge and because experienced journeymen have taught him to apply his knowledge on the job. Third, he is safer because safety training was part of his apprenticeship.

Construction experts assert that the apprenticeship-trained craftsman makes a better supervisor because he knows all parts of the job -- from rough-in to finish work. Also, his related classroom instruction has taught him to work effectively with blueprints in the design and layout of jobs.

Safety and Individual Productivity

While a direct measure of the relative skills and abilities of apprenticeship-trained journeymen would be useful, we do not have such a measure or the data for constructing it. We found no information with which to test the hypothesis that apprenticeship-trained mechanics are safer workers, although data generated by the reporting requirements of the Occupational Safety and Health Act may provide a usable base for measurement in the future.

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[1] Howard G. Foster, "Apprenticeship Training in the Building Trades: A Sympathetic Assessment," Labor Law Journal, Vol. 22, No. 1 (January 1971), pp. 3-12.

Even the measurement of productivity in construction is complicated by the absence of a generally accepted measure of output. Behman has attempted to measure physical productivity directly, but without studying differences among individual workers.[2] A laboratory experiment on productivity in the masonry trades conducted in 1972 at the University of Texas considered the possible effects on productivity of a variety of factors such as time of day, temperature, and intensity of ultraviolet rays, but not the training background of individual workers.[3]

Followup Studies of Apprenticeship Graduates

While productivity studies have not shed light on the training backgrounds of craftsmen, efforts have been made to assess the performance of apprenticeship-trained workers. However, past research on apprenticeship, while revealing much about the work experience and career advancement patterns of apprenticeship graduates, provides little insight into how the experiences of apprenticeship graduates compare with those of other journeymen.

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[2]Sara Behman, "On-Site Labor Productivity in Home Building," Industrial Relations, Vol. 11, No. 3 (October 1972), pp. 314-325.

[3]Interview with Clayford T. Grimm, associate director, Center for Building Research, University of Texas, Austin, March 24, 1972.

The results of this laboratory experiment have been reported in Mason Productivity Study, Volume III: Measurement of Productivity, Center for Building Research, University of Texas. Other reports generated from the project are Volume I: A Review of the Literature of Mason Productivity with Annotated Bibliography and Index and Volume II: A Construction Industry Opinion Survey on Mason Productivity. Copies of these reports are available from the National Technical Information Service, Springfield, Virginia 22151.

Some data on the work experience of apprenticeship graduates are available in followup studies obtained through the use of mail questionnaires. In 1956, the Bureau of Apprenticeship and Training, U.S. Department of Labor, conducted a survey of work experience and career advancement of a sampling of craftsmen in all apprenticeable occupations who had completed apprenticeships in 1950.[4] In 1960, the California Division of Apprenticeship Standards conducted a similar followup survey of California apprentices who completed their training in 1955.[5] The survey, covering all apprenticeable trades, assessed the labor market experience of apprenticeship-trained craftsmen 5 years after their graduation. Unfortunately, neither of these studies contains information on a comparable control group of journeymen whose performances could be compared with those of the apprenticeship graduates.

Other studies provide data on the work experiences of apprenticeship-trained craftsmen as adjuncts to investigations of related questions. Behman surveyed former carpentry apprentices in the San Francisco Bay Area to explain why apprentices drop out of the carpenters' program.[6] The Division of Research and Statistics of the New York State Department of Labor, assisted by Felician Foltman at Cornell University, is currently conducting an extensive followup study of former apprentices in New York State in order to study the relationship of apprenticeship training in the pipe trades. Drew, of Purdue University, obtained feedback on the programs from former apprentices but made no attempt to compare apprenticeship-trained

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[4]Career Patterns of Former Apprentices (Washington: U.S. Department of Labor, Bureau of Apprenticeship and Training, 1959), Bulletin T-147. For a summary of this report, see Joseph H. Schuster, "Career Patterns of Former Apprentices," Occupational Outlook Quarterly, Vol. 3, No. 2 (May 1959), pp. 13-19.

[5]California Division of Apprenticeship Standards, Survey of Completed Apprentices Certified by the California Apprenticeship Council in 1955 (San Francisco: Division of Apprenticeship Standards, California Department of Industrial Relations, 1960).

[6]Sara Behman, "Survey of Former Carpenter Apprentices Registered in the Bay Counties Carpenters Apprenticeship and Training Program" (Berkeley: Institute of Industrial Relations, mimeograph, 1969).

journeymen with other groups.[7] Again, because these studies deal exclusively with journeymen who have had apprenticeship training, they offer no opportunity to contrast craftsmen who have had apprenticeship training with those who have not. Finally, Barocci's 1971 study of apprenticeship completers and dropouts in Wisconsin found that apprenticeship graduates had higher earnings than dropouts, particularly among construction workers. While useful, this finding may be due to dropouts' working for the most part in lower paying nonunion jobs, while completers tend to work more in higher paying branches of the industry. In any event, no specific comparison is made between apprenticeship graduates and informally trained workers.[8]

Existing Comparisons of Apprenticeship Graduates with Other Craftsmen

Foster's study of alternative training sources for construction journeymen in upstate New York provides some useful information on the training backgrounds of apprenticeship graduates and those who have been trained in other ways.[9] Foster's study focused on journeymen in the Syracuse area in four crafts -- bricklaying, carpentry, electrical work, and operating engineering. His analysis was based on questionnaire returns from 784 craftsmen. However, the questionnaire was not designed to evaluate the advantages of apprenticeship relative to other ways of acquiring construction skills.

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[7]Alfred S. Drew, Educational and Training Adjustments in Selected Apprenticeable Trades (Lafayette, Ind.: Purdue Research Foundation, Purdue University, 1969), two volumes. Also, see Toward the Ideal Journeyman (Washington: U.S. Department of Labor, 1970), Manpower Research Monograph No. 20, five volumes. The studies were summarized in the following article: "Strengthening Apprenticeship," Manpower, Vol. 4, No. 2 (February 1971), pp. 21-25. See also a comment by Martin J. Ward on this study, "Journeyman Training in the Pipe Trades," Manpower, Vol. 4, No. 8 (August 1972), pp. 20-32.

[8]Thomas A. Barocci, "Apprentice Dropouts: Cause and Effect," Manpower, Vol. 5, No. 1 (January 1973), pp. 9-13.

[9]Howard G. Foster, "Labor Supply in the Construction Industry: A Case Study of Upstate New York" (unpublished Ph. D. dissertation, Cornell University, 1969). For a summary of the study, see Howard G. Foster, "Nonapprentice Sources of Training in Construction," Monthly Labor Review, Vol. 93, No. 2 (February 1970), pp. 21-26.

Two approaches have been taken to study the effects of training backgrounds on the productivity of individual workers. One has been to review the performances of candidates taking occupational licensing examinations. Scores on one such highly regarded test,[10] the Texas State Journeyman Plumbing Examination, show that apprenticeship-trained examinees outperformed others. As illustrated in table 56, every apprenticeship-trained applicant in the study passed, whereas only three-fourths of the nonapprenticeship-trained examinees passed. Furthermore, the apprenticeship-trained men passed with a higher average score, even though they had fewer years of experience at the trade. Insofar as the test measures skill at the trade, it shows that apprenticeship-trained journeymen have a definite skill advantage over nonapprenticeship-trained journeymen. But if test scores measure only ability to take a test, then apprenticeship might be only good preparation for test taking. Thus, although these test results strongly indicate that apprenticeship training produces craftsmen with superior skills, they are not conclusive.

A second attempt to compare the efficacy of apprenticeship with other training paths was made by Horowitz and Herrnstadt

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[10]This unusually well designed and well administered test is described in detail in Benjamin Shimberg, Barbara F. Esser, and Daniel H. Kruger, Occupational Licensing: Practices and Policy (Washington: Public Affairs Press, 1973), pp. 95-96.

The test itself was developed in consultation with plumbers from all parts of Texas and was improved on the basis of two professional evaluations. See Herschel T. Manuel et al., "The Texas Examination for Journeyman Plumbers," report of research conducted at the University of Texas for the Texas State Board of Plumbing Examiners (Austin, Tex.: University of Texas Testing and Guidance Bureau, multilith, 1951). Also see Edwin Wilson Mumma, "The Application of the Critical Incident Technique to the Psychological Measure of Proficiency: The Texas Examination for Journeyman Plumbers" (unpublished Ph. D. dissertation, University of Texas at Austin, 1954).

TABLE 56. PERFORMANCE OF APPLICANTS TAKING THE TEXAS STATE EXAMINATION FOR JOURNEYMAN PLUMBING LICENSE, NOVEMBER 1, 1963 THROUGH OCTOBER 31, 1964, BY TRAINING BACKGROUND

Analysis of all applicants

Training background	Average years experience at the trade	Number examined	Number and percentage passed	Average score
Apprenticeship trained[1]	5.0 years	46	46 (100%)	86.4
Nonapprenticeship trained	5.7 years	758	574 (75.7%)	70.7

Analysis of examinees with passing scores

Training background	Average years experience at the trade	Number passed	Average score
Apprenticeship trained[1]	5.0 years	46	86.4
Nonapprenticeship trained	6.1 years	574	80.8

[1] Refers to training in registered apprenticeship programs only.

SOURCE: Texas State Board of Plumbing Examiners.

in a study of tool- and die-making crafts in Boston.[11] They investigated the training background of a sample of tool and die makers and asked workers' foremen and fellow workers to evaluate their performance on the job. The study showed that workers trained in vocational high school followed by apprenticeship were rated highest by their peers and supervisors. However, the study also concluded that craftsmen trained in vocational high school alone were rated higher than craftsmen from vocational high schools who had had on-the-job training -- an internally inconsistent result.

While this type of inquiry is an appealing attempt to assess the relative advantages of apprenticeship training, reliance upon the testimony of coworkers and supervisors leaves Horowitz and Herrnstadt with highly subjective feelings (which may explain the internal inconsistency previously noted). Further, the study has limited relevance to evaluating apprenticeship in the building trades since it did not deal with the construction industry.

New Means of Comparing Apprenticeship Graduates with Other Journeymen

Thus, although logic dictates that apprenticeship provides the best available training in construction, the issue of whether it actually does has not been dealt with satisfactorily. Furthermore, a review of the literature reveals that the empirical data required for dealing with this issue have not yet been collected. Therefore, we have attempted to measure more objectively the relative worth of apprenticeship and nonapprenticeship training in construction, utilizing two new approaches. One was to determine whether apprenticeship graduates are found in disproportionately high numbers in supervisory

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[11]Morris A. Horowitz and Irwin L. Herrnstadt, "A Study of the Training of Tool and Die Makers" (Boston: Department of Economics, Northwestern University, 1969). The study is summarized in two more convenient sources: Learning the Tool and Die Maker Trade (Washington: U.S. Department of Labor, 1970), Manpower Research Monograph No. 17, and Morris A. Horowitz and Irwin L. Herrnstadt, "The Training and Education of Tool and Die Makers," Proceedings of the Twentieth Annual Winter Meeting of the Industrial Relations Research Association, Washington, D.C., December 28-29, 1967 (Madison, Wis.: Industrial Relations Research Association, 1968), pp. 15-24.

positions or whether foremen and superintendents have been trained by and large in other ways. The results of this method are examined later in this chapter.

The other approach was to compare the number of hours worked annually by a random sample of journeymen from each local union studied. This method is based on the premise that compared to journeymen with less training, more skilled and more productive workers are in greater demand and will therefore tend to suffer less unemployment.

Comparison of Average Hours Worked by Journeymen

Apprenticeship graduates should experience more steady employment than union craftsmen trained in other ways, largely because apprenticeship-trained journeymen tend to be broadly trained, whereas other journeymen (especially those who have "picked up the trade" on the job) tend to be specialists qualified to perform only one or a few tasks.[12] As has been illustrated in Chapter III, journeymen admitted directly ordinarily are tested over their knowledge of the trade. In practice, these tests are usually easier than final examinations given to apprentices.

Further, it is common for the journeyman test to cover only the part of the trade in which the applicant considers himself proficient. For example, a man could join a carpenters' local if he could pass a test over form building or become a union ironworker by passing a test over reinforcing work. Welders may join a variety of unions due to that proficiency alone. By contrast, nearly all apprenticeship-trained journeymen are expected to be exposed to a wide variety of work and training, both on the job and in the classroom. A well organized apprenticeship program teaches apprentices all phases of their trades, including the reading of blueprints, the laying out of various types of work, and, in some cases, cost estimating.

Given the premise that they are likely to be more broadly trained, there are several reasons why apprenticeship-trained journeymen might be expected to suffer fewer and briefer periods of unemployment than more narrowly trained journeymen. First, employers will tend to retain their better workers longer and conversely will lay off inferior workers sooner. A broadly trained mechanic is likely to stay with fewer employers since he will be on the firm's "core labor force."

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[12] This is not to deny that many apprenticeship-trained journeymen tend to work in their favorite specialties. However, the point is that the apprenticeship-trained journeymen have been exposed to several specialties and would thus be in a better position to switch to a different sort of work if necessary.

Second, the broadly trained craftsman can remain with a contractor through the duration of a job, during all phases from layout and rough-in to the finish work. (This is an especially important consideration on longer commercial and industrial jobs.)

Third, broadly trained mechanics are more flexible and can adapt better to changes in technology and/or market demand. Thus, when work is not plentiful, a person who is narrowly trained may have difficulty finding work in his specialty, whereas a journeyman who is expert in all areas of his trade will not be laid off due to inability to perform the work that is available.

Fourth, the broadly trained mechanic has more options to choose from; he may choose to work in specialties which, by the nature of the work, offer the most regular employment.

Fifth, because a broadly trained mechanic will tend to be in supervisory jobs more often, and because supervisory personnel are more regularly employed than journeymen, the broadly trained tradesman will find steady employment more often as a supervisor.

Finally, broadly skilled mechanics are more likely to be requested by contractors or to be able to get jobs without going through a formal referral procedure; narrowly trained men are apt to have to wait until they are referred to work by the business agent.[13]

For all of the reasons just mentioned, journeymen possessing a wide variety of skills are likely to suffer fewer and briefer periods of unemployment than those faced by narrowly trained journeymen. Thus, to find that apprenticeship-trained journeymen work more on the average than other journeymen would be to support the claim that apprenticeship offers superior training for construction workers.

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[13] Most unions do not use rigid "first in, first out" referral systems exclusively, but permit individual members to find jobs informally if possible. Where formal arrangements are the sole means of referral, the difference between hours worked by apprenticeship graduates and by other journeymen would be expected to diminish considerably.

Methodology for Comparison of Average Hours Worked

The hypothesis was tested by taking samples of journeymen's names and the hours they worked from each cooperating union's pension or health and welfare fund eligibility list.[14] The samples included data for several years from the unions in Houston, Columbus, San Francisco, Oakland, and Chicago; in each of the other cities it proved feasible to retrieve data for only 1 year.

When the names of traveling members of other locals or nonmembers working on temporary permits appeared, they were deleted, because many were indentured late in the sample year and thus could not be counted for the entire year. Moreover, the number of hours worked by apprentices is often as much a function on the efficiency of the program and the contractors' willingness to work apprentices as of the apprentices' skill on the job. Finally, the names of paid union officials were deleted.

The names remaining in the samples, then, were those of active journeyman members of the unions being studied. The lists of names and hours worked were checked with apprenticeship coordinators and with records kept by the Bureau of Apprenticeship and Training and State apprenticeship agencies to determine which journeymen had completed registered apprenticeship programs.

Sampling Procedures

The samples analyzed in this chapter ranged from only 1 percent of the active membership of the Bricklayers Executive Committee in New York (whose officials would allow only a miniscule sampling) to over 20 percent of the membership of some smaller locals. We attempted to get at least 10 percent samples of all but the largest unions, although after the names of travelers, apprentices, retired members, and union officials were deleted, some samples were less than 10 percent of the total membership.

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[14]Contributions to these funds are made by contractors on the basis of a negotiated number of cents per hour worked by each man. Thus, it is possible to state with reasonable accuracy the number of hours worked by each man for union contractors. Some men, of course, may work in open shops (for less money); such work does not appear in the data presented here.

We extracted samples in two ways. One was to select a name arbitrarily from the pension fund lists, on which names are kept either alphabetically or by social security number, and to take every fifth or tenth name that followed until the desired sample size was obtained. The other was to select a name arbitrarily and to take the 10 names that followed, then skip several pages and select another 10 names, and so on until the desired number of names was obtained. When used on an alphabetical list of names, the latter method often revealed several persons related to each other. This was an advantage in light of our intention to learn how workers actually get into construction unions.

There was only one significant departure from these procedures. While requesting a sample from the Carpenters District Council in Chicago, we were mistakenly informed that the council had had a registered program for only the last 6 years[15] and that the number of graduates would be so small relative to the total membership that any sample selected would probably be unrepresentative of the apprenticeship graduates. Thus, we requested a list of half of the men who joined the council's local unions in 1970, thereby assuring the presence in the sample of a representative number of apprenticeship graduates.

Results of Comparisons of Average Hours Worked

The sampling was performed as carefully as "real world" circumstances allowed. There are, of course, many methodological difficulties and problems of interpretation of the data.[16] As in the current literature on returns to investment in human capital, there is the problem of factoring out the impact of education and training from numerous other influences -- such as

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[15]As it turned out, the program had been registered for many years, but the sample had already been taken when that fact was discovered.

[16]For an introduction to the problems and difficulties of this type of research, see Garth L. Mangum, "Evaluating Federal Manpower Programs," Proceedings of the Twentieth Annual Winter Meeting of the Industrial Relations Research Association, Washington, D.C., December 28-29, 1967 (Madison, Wis.: Industrial Relations Research Association, 1968), pp. 161-171; and Glen C. Cain and Robinson G. Hollister, "The Methodology of Evaluating Social Action Programs," Public-Private Manpower Policies, ed. Arnold R. Weber (Madison, Wis.: Industrial Relations Research Association, 1969), pp. 5-34.

native ability, family status, or peer influences -- which may affect income and employment. These and other problems dealing with gathering and interpreting the data are discussed later in this chapter.

The results of the comparisons of average hours worked by the samples of apprenticeship-trained and other journeymen are summarized by international union in tables 57-62. The data in these tables are not as complete as would be desired, due to lack of cooperation from certain local unions and district councils. Neither are the figures comparable between trades or cities, due to differing labor market conditions and referral procedures. Nevertheless, the data summarized below are emphatic in their support of the hypothesis that journeymen with apprenticeship training, probably because of their broader skills, will tend to work more than journeymen without apprenticeship training, who are more likely to be narrowly skilled specialists.

In 32 of the 41 local unions and district councils for which data were available, apprenticeship-trained journeymen worked consistently and significantly more than journeymen trained in other ways. By contrast, in only three locals did apprenticeship-trained journeymen work less than journeymen without apprenticeship (and in only one case was this true for more than 1 year). Six locals showed mixed results or differentials between average hours worked of less than 1 percent. That three of these are UA locals may reflect the fact that the plumbers seem to have more formal hiring hall arrangements than the other unions with the possible exception of IBEW locals. These arrangements would help to explain why, in the plumbers' unions which consistently had differentials greater than 1 percent, the differentials exceeded 10 percent in only 2 years. Formal hiring halls probably spread work more evenly in the plumbers' unions than do the less formal methods of job search common to other crafts.

The data in tables 57-62 further reveal that, of 199 percentage differentials, 100 were greater than 1 percent. Only 10 differentials were less than -1 percent, while 9 fell between -.9 percent and .9 percent. Thus, 84 percent of the cases support the hypothesis that apprenticeship-trained craftsmen are more broadly trained and suffer less from unemployment than other journeymen. Regardless of whether one considers only local unions or the total number of comparisons, then, the cases supporting the hypothesis outnumber the cases opposing it by 10 to 1.

The hours-worked differentials which are favorable to apprenticeship as a source of training are as large as they are numerous. There were 31 differentials between 10 percent and 20 percent, 11 between 20 percent and 40 percent, and 3

TABLE 57. COMPARISON OF AVERAGE HOURS WORKED BY APPRENTICESHIP-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY YEAR: BRICKLAYERS UNIONS

(1) Unions (and years studied)	(2) Journeymen in sample (percent of active membership) Number	Percent	(3) Apprenticeship graduates (percent of sample) Number	Percent	Average hours worked by: (4) Apprenticeship graduates	(5) Journeymen not trained in apprenticeship	(6) Percentage differential (4)-(5)/(5)
Atlanta (Local 8)							
1970	76	8	20	26	1,047[1]	993[1]	5.4
New York (Executive Committee)							
1970	64	1	21	33	1,010[2]	1,039[2]	-2.8
Chicago (Local 21)							
1971	267	5	99	37	1,411	1,215	16.1
1970	284	6	104	37	1,394	1,272	9.6
1969	295	6	110	37	1,639	1,536	6.7
1968	294	6	110	37	1,605	1,520	5.6
Columbus (Local 55)							
1971-72	115	21	30	26	1,851	1,248	48.3
1970-71	111	21	28	25	1,273	1,006	26.5
1969-70	101	19	28	28	1,343	937	42.3
Oakland (Local 8)							
1971-72	64	16	15	23	1,233	1,112	11.0
1970-71	63	15	16	25	1,097	1,112	-1.4
1969-70	58	14	14	24	1,274	1,230	3.6
1968-69	58	14	13	22	1,183	1,095	8.0
1967-68	57	14	12	21	1,018	1,055	- 3.7
1966-67	57	14	10	18	904	896	.9
1965-66	55	13	9	16	1,314	1,248	5.3
1964-65	52	13	9	17	991	939	5.5
San Francisco (Local 7)							
1971	119	30	18	15	1,217	1,105	10.1
1970	119	30	19	16	1,211	1,221	- .8
1969	116	29	19	16	1,051	1,236	-17.6
1968	106	27	17	16	643	571	12.6

[1]Strike during summer reduced hours for everybody.
[2]Work was scarce.

SOURCE: Information on hours worked was obtained for samples of economically active journeymen from various union pension and health and welfare trust fund records. Data on prenticeship background were obtained from apprenticeship ordinators, the Bureau of Apprenticeship and Training, St apprenticeship agencies, and personal interviews.

TABLE 58. COMPARISON OF AVERAGE HOURS WORKED BY APPRENTICESHIP-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY YEAR: CARPENTERS UNIONS

(1) Unions (and years studied)	(2) Journeymen in sample (percent of active membership) Number	Percent	(3) Apprenticeship graduates (percent of sample) Number	Percent	Average hours worked by: (4) Apprenticeship graduates	(5) Journeymen not trained in apprenticeship	(6) Percentage differential (4)-(5)/(5)
Atlanta (Local 225)							
1970	154	6	14	9	1,389	1,281	8.4
Austin (Local 1266)							
1971	53	7	12	23	825[1]	738[1]	11.8
Houston (District Council)							
1971	271	4	53	20	1,573	1,262	24.6
1970	236	4	44	19	1,771	1,532	15.6
Columbus (Local 200)							
1971-72	185	10	40	22	1,542	1,383	11.5
1970-71	197	11	38	19	1,540	1,320	16.7
1969-70	195	11	37	19	1,549	1,460	6.1
Jackson (Local 1471)							
1971	94	19	21	22	1,474	1,148	28.4
Chicago (District Council)							
1971	749	2	46	6	1,561	1,364	14.4
1970	704	2	46	7	1,588	1,392	14.1
Bay Area (District Council) (San Francisco and Oakland)							
1971	406	5	104	26	1,450	1,256	15.4
1970	360	5	97	27	1,484	1,285	15.5
1969	359	5	99	28	1,558	1,371	13.6
1968	327	5	87	27	1,545	1,460	5.8
1967	310	5	80	26	1,513	1,332	13.6
1966	300	5	79	26	1,519	1,382	9.9
1965	295	5	74	25	1,652	1,443	14.5
1964	289	5	74	26	1,690	1,444	17.0
1963	267	5	68	25	1,557	1,485	4.8
1962	244	5	60	25	1,602	1,365	17.3
1961	214	5	55	26	1,702	1,514	12.4
1960	208	5	51	25	1,668	1,490	12.0
1959	198	5	51	26	1,684	1,541	9.3
1958	176	5	49	28	1,616	1,526	5.9
1957	167	5	47	28	1,582	1,406	12.5
1956	169	5	46	27	1,639	1,508	8.7
1955	162	5	41	25	1,716	1,457	17.8
1954	139	5	36	26	1,523	1,432	6.3
1953	119	5	28	24	1,550	1,296	19.6

[1] January-July 1971 only. No other data available.

SOURCE: Information on hours worked was obtained for samples of economically active journeymen from various union pension and health and welfare trust fund records. Data on apprenticeship background were obtained from apprenticeship coordinators, the Bureau of Apprenticeship and Training, State apprenticeship agencies, and personal interviews.

TABLE 59. COMPARISON OF AVERAGE HOURS WORKED BY APPRENTICESHIP-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY YEAR: IBEW UNIONS

(1) Unions (and years studied)	(2) Journeymen in sample (percent of active membership)		(3) Apprenticeship graduates (percent of sample)		Average hours worked by:		(6) Percentage differential (4)-(5)/(5)
	Number	Percent	Number	Percent	(4) Apprenticeship graduates	(5) Journeymen not trained in apprenticeship	
Atlanta (Local 613)							
1970	78	8	25	32	2,121	1,338	58.5
Houston (Local 716)							
1971	107	8	33	31	1,775	1,334	33.1
1970	107	8	33	31	1,867	1,589	17.5
Columbus (Local 683)							
1970-71	104	12	53	51	1,829	1,716	6.6
1969-70	101	12	47	47	2,107	1,825	15.4
1968-69	86	10	37	43	2,264	1,948	16.2
Jackson (Local 480)							
1971-72	72	31	37	51	1,277	1,288	-1.0
Oakland (Local 595)							
1970	227	23	125	55	1,662	1,532	8.5
1969	184	19	95	52	1,717	1,678	2.3
1968	173	18	89	51	1,718	1,608	6.8
1967	164	17	84	51	1,593	1,466	8.7
1966	156	16	79	51	1,762	1,654	6.5
1965	146	15	67	46	1,735	1,578	9.9
San Francisco (Local 6)							
1971	233	29	89	38	1,523	1,266	20.3
1970	235	29	89	38	1,491	1,351	10.4
1969	229	29	83	36	1,660	1,368	21.3

SOURCE: Information on hours worked was obtained for samples of economically active journeymen from various union pension and health and welfare trust fund records. Data on apprenticeship background were obtained from apprenticeship coordinators, the Bureau of Apprenticeship and Training, State apprenticeship agencies, and personal interviews.

TABLE 60. COMPARISON OF AVERAGE HOURS WORKED BY APPRENTICESHIP-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY YEAR: IRONWORKERS UNIONS

(1) Unions (and years studied)	(2) Journeymen in sample (percent of active membership) Number	Percent	(3) Apprenticeship graduates (percent of sample) Number	Percent	Average hours worked by: (4) Apprenticeship graduates	(5) Journeymen not trained in apprenticeship	(6) Percentage differential (4)-(5)/(5)
Austin (Local 482)							
1970	38	16	10	26	1,658	1,554	6.7
Houston (Local 84)							
1971	156	13	30	19	1,450	1,465	-1.0
1970	156	13	30	19	1,291	1,376	-6.6
Columbus (Local 172)							
1970	86	13	20	23	1,486	1,403	5.9
1969	81	12	17	21	1,701	1,395	21.9
1968	78	12	13	17	1,732	1,534	12.9
Chicago (Local 1)							
1971	228	11	77	34	1,509	1,313	14.9
1970	256	13	79	31	1,599	1,365	17.1
Oakland (Local 378)							
1971-72	155	15	84	55	1,526	1,316	16.0
1970-71	161	15	84	52	1,618	1,490	8.6
1969-70	160	15	86	54	1,740	1,664	4.6
San Francisco (Local 377)							
1971-72	183	16	68	37	1,443	1,472	-2.0
1970-71	189	16	71	38	1,574	1,519	3.6
1969-70	191	16	72	38	1,654	1,612	2.6

SOURCE: Information on hours worked was obtained for samples of economically active journeymen from various union pension and health and welfare trust fund records. Data on apprenticeship background were obtained from apprenticeship coordinators, the Bureau of Apprenticeship and Training, State apprenticeship agencies, and personal interviews.

TABLE 61. COMPARISON OF AVERAGE HOURS WORKED BY APPRENTICESHIP-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY YEAR: PLUMBERS AND PIPEFITTERS UNIONS

(1) Unions (and years studied)	(2) Journeymen in sample (percent of active membership) Number	Percent	(3) Apprenticeship graduates (percent of sample) Number	Percent	Average hours worked by: (4) Apprenticeship graduates	(5) Journeymen not trained in apprenticeship	(6) Percentage differential (4)-(5)/(5)
Atlanta (Local 72)							
1970	83	8	31	37	1,476	1,466	0.7[1]
New York (Plumbers Local 1)							
1970	85	3	20	23	1,500	1,506	-.4
Austin (Local 286)							
1970	38	10	13	34	1,810	1,776	2.2
Houston (Pipefitters Local 211)							
1971	130	4	27	21	1,743	1,358	28.4
1970	130	4	27	21	1,930	1,820	6.0
Houston (Plumbers Local 68)							
1971	172	17	52	30	1,841	1,822	1.0
1970	179	18	53	30	1,865	1,720	8.4
Columbus (Local 189)							
1971-72	129	13	49	38	1,707	1,539	10.9
1970-71	126	13	47	37	1,709	1,645	4.0
1969-70	126	13	48	38	1,872	1,843	1.6
Chicago (Plumbers Local 130)							
1971-72	299	7	132	44	1,926	1,871	2.9
1970-71	279	7	121	43	1,878	1,823	3.0
Oakland (Plumbers Local 444)							
1971	189	24	88	47	1,609	1,551	3.7
1970	189	24	90	48	1,579	1,478	6.8
1969	182	23	83	46	1,640	1,567	4.7
1968	174	22	78	45	1,643	1,526	7.7
1967	153	19	66	43	1,524	1,446	5.4
1966	148	19	59	40	1,734	1,621	7.0
1965	141	18	56	40	1,752	1,638	7.0
San Francisco (Local 38)							
1970-71	544	20	149	27	1,454	1,407	3.3
1969-70	543	20	148	27	1,455	1,406	3.5
1968-69	533	20	140	26	1,608	1,562	2.9
1967-68	511	20	135	26	1,549	1,549	0
1966-67	482	20	128	27	1,405	1,434	-2.1
1965-66	462	20	125	27	1,614	1,612	.1

[1] Strict referral system.

SOURCE: Information on hours worked was obtained for samples of economically active journeymen from various union pension and health and welfare trust fund records. Data on apprenticeship background were obtained from apprenticeship coordinators, the Bureau of Apprenticeship and Training, State apprenticeship agencies, and personal interviews.

TABLE 62. COMPARISON OF AVERAGE HOURS WORKED BY APPRENTICESHIP-TRAINED JOURNEYMEN AND JOURNEYMEN NOT TRAINED IN APPRENTICESHIPS, BY YEAR: SHEET METAL WORKERS UNIONS

(1) Unions (and years studied)	(2) Journeymen in sample (percent of active membership)		(3) Apprenticeship graduates (percent of sample)		Average hours worked by:		(6) Percentage differential (4)-(5)/(5)
	Number	Percent	Number	Percent	(4) Apprenticeship graduates	(5) Journeymen not trained in apprenticeship	
Atlanta (Local 85)							
1970	99	13	24	24	1,603	1,318	21.6
Chicago (Local 73)							
1970-71	268	4	51	23	1,828	1,819	.5
1969-70	263	4	51	23	1,897	1,916	-1.0
Houston (Local 54)							
1971	112	14	48	43	1,762	1,610	9.4
1970	112	14	48	43	1,720	1,573	9.3
Columbus (Local 98)							
1971-72	83	9	27	33	1,620	1,313	23.4
1970-71	93	9	27	29	1,812	1,711	5.9
1969-70	92	9	24	26	1,652	1,646	.4
1968-69	85	9	22	26	1,947	1,816	7.2
Jackson (Local 406)							
1971	57	4	36	63	2,005	1,626	23.3
Oakland (Local 216)							
1971	188	16	102	54	1,640	1,511	8.6
1970	203	17	105	52	1,686	1,574	7.1
San Francisco (Local 104)							
1971	156	21	78	50	1,487	1,472	1.0
1970	169	23	85	50	1,524	1,513	.7

SOURCE: Information on hours worked was obtained for samples of economically active journeymen from various union pension and health and welfare trust fund records. Data on apprenticeship background were obtained from apprenticeship coordinators, the Bureau of Apprenticeship and Training, State apprenticeship agencies, and personal interviews.

exceeding 40 percent. Thus, nearly half of the "favorable" comparisons exceeded 10 percent; by contrast, only one "unfavorable" comparison (-17.6 percent) was below -10 percent.

Methodological Difficulties

Unfortunately, the data are incomplete or otherwise imperfect for several reasons. First, there are gaps in the data because not all unions gave us access to their information. Second, some information is unreported or misreported to the pension fund offices by contractors. Third, records on apprenticeship graduates were often unobtainable, incomplete, or so disorganized that some information may have been overlooked.

A possible conceptual difficulty is that our definition of apprenticeship is confined to programs registered with the BAT or State apprenticeship agencies. Although unregistered programs may turn out as many craftsmen as do registered programs, the registered programs are much more uniform in quality and information is more easily obtained regarding their graduates.

Even so, it must be recognized that not all registered apprenticeship programs are alike; instead, the nature and quality of the programs vary widely among trades and among local unions in each trade. Some programs are quite new and experimental while others are decades old. Some are scrupulously supervised and coordinated; others have practically no direction. The quality of instruction is not uniform, and instructional facilities vary greatly in their usefulness. Many of the older programs previously had no classroom instruction, but few are without such related training now. Still, the quality of apprenticeship training programs within a trade is more uniform than in most other broad categories of training, such as vocational education.

We recognize another methodological difficulty, namely, that the number of hours a man spends at work is a function of more than training alone. Many influences affect his work record. For example, whenever it was learned that a person suffered prolonged sickness or disability during a year, his hours for that particular year were stricken from the sample. Of course, perfect information was not available on all illnesses and disabilities, but these were assumed to be independent of training backgrounds. (In the case of disabilities, however, if apprenticeship-trained journeymen are safer workers and thus likely to have fewer work-related accidents, they should lose fewer man-hours due to such injuries. This point would support the hypothesis that apprenticeship training produces superior craftsmen.)

There are some factors affecting hours worked which would not be likely to affect the average for either group more than the other. Among these are nepotism, age, and incidence of moonlighting.

Where nepotism is involved in allocating work, employment tends to be granted regardless of skill or capability. An employee is likely to work more steadily if he is working for his father or another relative who employs him regardless of his merit. However, there is no reason to expect any difference in the incidence of this practice among apprenticeship-trained and nonapprenticeship-trained journeymen. It is assumed that a journeyman's likelihood of working for a relative is independent of his training.

Regarding age, because older construction workers might not be able to perform well on certain types of construction jobs which are demanding in terms of physical exertion or pace, they might be handicapped in the labor market and thus likely to work less. On the other hand, with age come greater maturity, knowledge, and experience -- characteristics which would make older workers more attractive to employers. Whether increased experience or diminished physical ability has the greater influence on hours worked depends on the nature of the trade and specialty and type of work under consideration.

In the few samples in which ages were obtained as well as hours worked, age was found not to be a factor. That is, up until almost immediately before retirement, experience gained over years of work at the trade counterbalanced diminished physical capacity lost over the years.

Since apprenticeship programs have been registered only since the National Apprenticeship (Fitzgerald) Act of 1937, apprenticeship-trained journeymen would be expected to be, on average, a younger group than other journeymen. (Indeed, as noted in Chapter IV, this was confirmed among the journeymen interviewed during this study.) However, since the advantageous effects of growing old appear to balance the disadvantageous effects, the younger age of apprenticeship-trained journeymen would not give them any undue benefit in the comparison of hours worked.

Journeymen moonlighting as contractors would tend to have fewer hours reported to the pension funds, since only hours worked as employees are reported. The effect of moonlighting on our results is probably insignificant, because the practice is forbidden by most unions and because journeymen who were known to have moonlighted were excluded from the samples. Any moonlighters remaining in the samples may have been nonapprenticeship-trained journeymen who had to work as contractors on small jobs because they could not find regular

employment as journeymen. On the other hand, moonlighting is a transitional step to becoming a full-fledged contractor; and since the best craftsmen are likely to become contractors, apprenticeship-trained men would be more than proportionately represented among those workers who moonlight as contractors. However, on the whole, this influence probably affects neither group more than the other.

Influence of Traveling on Hours Worked

A factor which may bias the average hours worked in favor of apprenticeship-trained journeymen is the incidence of traveling. As previously mentioned, travelers from other locals were excluded from the samples. However, if a man in the local under study traveled outside the area in which his pension fund was in effect,[17] his hours worked for the year may be understated.

The key question is, do apprenticeship graduates travel more or less than other journeymen? The answer is probably "less," since nonapprenticeship-trained mechanics are more likely to encounter unemployment in a given area and to be forced to seek employment in other areas. While this phenomenon would bias the hours-worked comparisons in favor of apprenticeship graduates, the results would be consistent with the hypothesis that the better trained journeymen are products of the apprenticeship system.

The Influence Of Referral System

Probably the most important of possible influences on hours worked is the referral system. Depending on the nature of the system used, a referral procedure could bias the data to favor either apprenticeship-trained or nonapprenticeship-trained journeymen. If a formal "hiring hall" system is organized on a "first in, first out" basis, as in some plumbers' locals, the referral system may have the effect of assisting less competent people to find jobs, thus effectively reducing differentials between apprenticeship-trained and nonapprenticeship-trained journeymen.

On the other hand, if the apprenticeship-trained men are placed into a preferred classification, such as an "A" section or a preferred seniority section, and if the nonapprenticeship-trained men tend to be more than proportionately represented in the less preferred categories ("B," "C," or lower seniority

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[17] Some pension funds cover wide areas, such as the ironworkers' pension fund in San Francisco, which is part of one covering California, Arizona, and Nevada. While other pension funds are more localized, some local unions have reciprocal agreements with other locals so that hours-worked data transfer.

classifications), then the referral system will operate in favor of ex-apprentices and consequently increase the differential between former apprentices and other journeymen.

To summarize, some extraneous influences on hours fit the hypothesis that apprenticeship-trained craftsmen will usually experience steadier employment than nonapprenticeship-trained men. The other influences "wash out," showing no significant overall bias for or against either group. One exception is the referral system, which can operate in favor of either group, depending on the manner in which it is organized.

Possible Alternative Explanations of the Results

As convincingly as the data appear to support our contention that apprenticeship is superior to other sorts of training, the correlation between types of training and hours worked may be spurious. Other factors may be responsible for the fact that apprenticeship graduates work more than other journeymen. Several possible explanations are considered below.

Business agents show favoritism in referrals to apprenticeship graduates. This is possible, but not likely. Since most local union members have not been trained in apprenticeships, a business agent who wished to remain in office would be foolish to discriminate against the majority of his members. In addition, it is difficult to imagine a business agent's motive for showing this kind of favoritism.

The superior performances of apprenticeship-trained journeymen are due to greater native ability or education. Since most apprentices have not received trade-related vocational education, it is doubtful that educational levels alone cause differences between the two types of journeymen. If the trade-related training received in apprenticeship does not produce wider ranges of skills, academic high school preparation should not be expected to cause such differences.

If "native ability" is responsible for the apprenticeship/nonapprenticeship differentials, it is not clear how apprenticeship programs discover which applicants have more native ability than the journeymen who have "picked up the trade." If anything, men who learned on the job rather than through formal instruction may have to have more native ability, in order to master their trades, than apprentices.

Apprenticeship graduates work more because they have greater attachment to the labor market. This argument is highly speculative and scarcely amenable to proof. If apprenticeship-trained journeymen are, indeed, more closely attached to the construction industry, it may be because they are making better livings in the industry than men without apprenticeship training. Journeymen who have not served apprenticeships may move into and out of the industry more often, but if so, it is quite possibly because they lack skills necessary to work full time in construction. Their more casual attachment to the industry may be, in other words, a matter of necessity rather than choice.

The better showing of apprenticeship graduates is due to journeyman upgrading programs, not to apprenticeship training. This is possible, but journeyman training closely resembles apprenticeship training, to the extent that some journeymen attend apprenticeship classes as part of their upgrading programs. Moreover, there are indications that apprenticeship graduates are more likely to take advantage of journeyman upgrading opportunities, indicating that apprenticeship teaches men the value of keeping their skills and training up to date in order to work more regularly. Of course, there could be some selectivity here because more highly motivated people might be more likely to enter apprenticeship and journeyman upgrading programs.

Conclusions From Hours-Worked Comparisons

The results of numerous comparisons of average hours worked by apprenticeship graduates and by other journeymen, while significant, do not prove that apprenticeship is preferable to other forms of training. Several alternative interpretations of these results have been advanced, but they do not seem convincing. We conclude, therefore, that while no theory has been proved by the foregoing analysis, substantial information supports our hypothesis that formal apprenticeship is, in fact, the superior form of training in construction.

Advancement To Supervisory Positions

To further test the merits of apprenticeship compared with other forms of training, a second measure was developed: the percentage of the supervisory work force (foremen, general foremen, and job superintendents) comprised of apprenticeship graduates. We thought that, even though apprenticeship is not designed explicitly to train supervisors, the broad range of

skills acquired in apprenticeship, including blueprint reading and layout work, should prepare apprentices for supervisory positions. (This point of view was shared by most business agents and apprenticeship coordinators.)

If apprenticeship actually is a better form of training for supervisors than other routes, apprenticeship graduates should appear as foremen and superintendents in relatively greater numbers than other mechanics. For example, if 30 percent of a given union's membership were trained in apprenticeships, but 50 percent of the supervisors from that union were so trained, credence would be given to the contention that apprenticeship-trained mechanics are more likely to become supervisors than other journeymen.

Accordingly, the names of men currently employed as foremen and superintendents were collected from cooperating contractors and checked with apprenticeship coordinators and BAT files to determine the number who had served apprenticeships. In each case the proportion of apprenticeship-trained supervisors was compared with the proportion of journeymen in the craft with apprenticeship training. The results of these comparisons are summarized in table 63.

As table 63 shows, the results of the supervisors' comparisons, while more mixed than those of the hours-worked comparisons, still indicate that apprenticeship-trained men are relatively over-represented in supervisory positions, presumably because of the nature of their training. In 5 of the 28 cases, the percentage of apprenticeship-trained journeymen was greater than the percentage of apprenticeship-trained supervisors, and in one the percentages were equal. In 19 cases, the percentage of apprenticeship-trained supervisors exceeded the percentage of apprenticeship-trained journeymen by 5 or more percentage points. In three other instances, there were absolute differences of fewer than 5 percentage points. Thus the number of comparisons "favorable" to apprenticeship training was much greater than the number of "unfavorable" comparisons, while several cases contained ambiguous results.

Unfortunately, there were few returns from general contractors who employ many bricklayers, carpenters, and ironworkers. Since electrical, sheet metal, and plumbing contractors were quite responsive, most of the comparisons were obtained from those crafts. Interestingly, these are the crafts requiring the greatest non-manipulative skills, perhaps that is why apprenticeship graduates in those trades seemed to fare so well in the comparisons of supervisory personnel.

As in the hours-worked study, numerous alternative explanations are available for the phenomenon of relatively large numbers of apprenticeship graduates in the supervisory ranks. Most of these -- favoritism, the effects of native

TABLE 63. COMPARISONS OF PROPORTIONS OF APPRENTICESHIP GRADUATES AMONG JOURNEYMEN AND SUPERVISORS SURVEYED, BY UNION, 1971-72

Union	(1) Percentage of journeymen who had served apprenticeships	(2) Number of supervisors	(3) Number of supervisors who had served apprenticeships	(4) Percentage of supervisors who had served apprenticeships (3)/(2)
Bricklayers				
Atlanta (Local 8)	26	32	5	16
Columbus (Local 55)	26	61	17	28
San Francisco (Local 7)	15	33	15	45
Oakland (Local 8)	23	30	18	60
Carpenters				
Austin (Local 1266)	23	41	6	15
Columbus (Local 200)	22	134	24	18
Jackson (Local 1471)	22	91	28	31
IBEW				
Atlanta (Local 613)	32	49	24	49
Houston (Local 716)	31	351	153	44
Columbus (Local 683)	51	143	73	51
Jackson (Local 480)	51	30	16	53
San Francisco (Local 6)	38	459	205	45
Oakland (Local 595)	55	341	183	54
Contra Costa (Local 302)	57[1]	56	37	66
Ironworkers				
Columbus (Local 172)	23	58	17	29
Chicago (Local 1)	34	112	44	39
San Francisco (Local 377) and Oakland (Local 378)	35[2]	130[2]	42	32
Plumbers and Pipefitters				
Atlanta (Local 72)	37	88	41	47
Austin (Local 286)	34	20	11	55
Houston (Pipefitters Local 211)	21	87	25	29
Chicago (Plumbers Local 130)	44	229	198	86
Oakland (Local 444)	47	167	96	57
Sheet Metal Workers				
Atlanta (Local 85)	24	34	9	26
Houston (Local 54)	43	139	82	59
Columbus (Local 98)	33	109	40	37
Jackson (Local 406)	63	25	21	84
Chicago (Local 73)	23	633	192	30
Oakland (Local 216)	54	121	76	63

[1] Not from hours-worked samples.

[2] Data on supervisors include men who transferred from other locals but for whom it was not possible to obtain information on training backgrounds.

SOURCE: The percentage of journeymen who completed apprenticeships (column 1) are the percentages of apprenticeship-trained journeymen in the hours-worked samples; where samples were taken for more than 1 year, the percentage in this table is for the most recent year samples. The percentages of supervisors who completed apprenticeships (column 4) were obtained from various surveys of a sampling of contractors conducted by mail, by telephone, or in person.

ability or education, greater attachment to the labor market, or the effect of journeyman upgrading -- have been dealt with already. An additional explanation -- a natural proclivity toward organization of effort and leadership ability -- is tempting, for the best mechanic is not necessarily the best supervisor. Undoubtedly, many are good leaders simply because others seem to follow them. However, it requires a substantial leap of faith to conclude that apprenticeship graduates become supervisors not because of their training, but solely because of their aura of leadership.

At least one factor tends to work against apprenticeship graduates' becoming foremen and superintendents. Apprenticeship graduates are younger, on the average, than other mechanics because apprenticeship programs are relatively new in many areas, and many graduates are comparative newcomers to their crafts. Some contractors have employed the same supervisors for years and are reluctant to replace them with younger hands, thus making accession to the supervisory ranks difficult for otherwise qualified apprenticeship graduates. Still, the high proportion of former apprentices in supervisory positions indicates that apprenticeship training imparts skills which could otherwise be learned only through many years of work experience.

Atlanta Sheet Metal Workers Survey

The results of a survey made independently of this study by Sheet Metal Workers Local 85 of Atlanta support our findings concerning the training backgrounds of supervisory personnel. Questionnaires (see Appendix D) were distributed to journeyman members to determine which, if any, apprenticeship schools they had attended, any related training received off the jobs, dates of entry into the trade, and current and previous supervisory positions.

Of 138 members returning questionnaires, 84, or 61 percent, claimed to have been trained in union apprenticeship schools. (The marked discrepancy between this figure of 60.9 percent and the estimate of 24 percent indicated by sample included in table 64 may be explained by a number of factors. Apparently apprenticeship graduates attend union meetings more frequently than other members do and, hence, would be more likely to receive and return such questionnaires. Also, the line reading "apprenticeship school attended" may have indicated to some nonapprenticeship-trained members that they were not to return the questionnaire. Finally, the lines indicating interest in supervisory positions held may have dissuaded some men in non-supervisory positions from answering the questionnaire.) Seventeen members reported backgrounds with formal training in the trade which was almost certainly not of the union apprenticeship variety, and 37 reported little or, in most cases, no formal training in the trade (see table 64).

TABLE 64. POSITIONS HELD BY JOURNEYMAN UNION MEMBERS, BY TYPE OF TRAINING: SHEET METAL WORKERS LOCAL 85, ATLANTA, 1971

Source of training	Supervisors					
	Superintendents (including general managers)	Foremen	Journeymen	Other[1]	Total	Supervisors as percentage of total
Union apprenticeship programs	7	25	49	3	84	38.1
Other formal training[2]	1	5	8	3	17	35.3
No formal training	1	7	26	3	37	21.6
Totals	9	37	82	9	138	33.3

[1]Includes union business managers and apprenticeship coordinators, mechanics working outside union jurisdiction, self-employed, unemployed, and retired.

[2]On-the-job training, vocational schools, correspondence schools, and military training.

SOURCE: Atlanta Sheet Metal Workers Local 85 survey

Although a high percentage of apprenticeship-trained members indicates that this sample is not representative of the union as a whole, much information can still be gleaned from the replies to the questionnaire. For example, 32 out of 84 apprenticeship graduates, or 38 percent, were supervisors (general managers, superintendents, and foremen); 6, or 35 percent, of those with formal training other than apprenticeship were supervisors; but only 8, or 22 percent, of those with no formal training were in supervisory positions. Table 64 demonstrates the superiority of formal training programs as preparation for supervisory work, but it does not indicate any clear advantage for apprenticeship as a training background.

Tables 65 and 66, however, show that apprenticeship is becoming a more and more important source of both journeymen and supervisors. Table 66 in particular shows that while 5 of the 7 supervisors (one did not report his source of training) with no formal training and all 6 supervisors with formal training other than through apprenticeship entered the trade before 1950, 25 of the 32 supervisors who completed apprenticeships entered the trade after 1950. It appears that while roughly the same percentage of apprenticeship graduates and members with other formal training have advanced to the ranks of forman and superintendent, the apprenticeship graduates have done so after having spent much less time in the trade. This finding reinforces our previous conclusion that apprenticeship not only is a superior training ground, but in many cases offers a shorter route to supervisory status.

TABLE 65. DATES OF ENTRY INTO THE UNION, BY TYPE OF TRAINING
SHEET METAL WORKERS LOCAL 85, ATLANTA, 1971

Source of training	Before 1940	1940-49	1950-59	1960-Present	Total
Apprenticeship	1	18	33	32	84
Other formal training	6	9	1	1	17
No formal training	10	14	4	8	36
Totals	17	41	38	41	137[1]

[1]Not all respondents supplied their dates of entry into the union.

SOURCE: Atlanta Sheet Metal Workers Local 85 survey.

TABLE 66. DATES OF ENTRY INTO THE UNION BY SUPERVISORS, BY TYPE OF TRAINING: SHEET METAL WORKERS LOCAL 85, ATLANTA, 1971

Source of training	Before 1940	1940-49	1950-59	1960-Present	Total
Apprenticeship	0	7	15	10	32
Other formal training	2	4	0	0	6
No formal training	2	3	1	1	7
Totals	4	14	16	11	45

SOURCE: Atlanta Sheet Metal Workers Local 85 survey.

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APPENDIX A

PERSONS WHO PROVIDED INFORMATION FOR THE PROJECT
(With Dates of Interviews, Where Applicable)

Atlanta

Union Officials

Bricklayers

James C. Dempsey, Business Agent, Bricklayers Local 8 (May 19, 1971)

Carpenters

Robert J. Ellis, Business Agent, Carpenters Local 2358 (May 20, 1971)

John L. Miles, Apprenticeship Director, Carpenters Local 225 (June 13, 1971)

Raymond Pressley, Business Agent, Carpenters Local 225 (May 21, 1971)

Electricians

Harry Bexley, Business Manager, IBEW Local 613 (June 14, 1971)

Loyd F. Caylor, Assistant Business Manager, IBEW Local 613 (May 21, 1971)

Walter Griffin, Training Director, IBEW Local 613 (May 21, 1971)

Ironworkers

Grady C. Gable, Financial Secretary, Treasurer, and Business Agent, Ironworkers Local 387 (July 13, 1971)

J. B. Lowry, Apprenticeship Coordinator, Ironworkers Local 387 (April 29, 1971)

Plumbers and Steamfitters

Virgil B. Harper, Financial Secretary-Treasurer, UA Local 72 (June 9, 1971)

Preston E. Lawler, Apprenticeship Director, UA Local 72, (July 11, 1971)

Sheet Metal Workers

Willie F. Elrod, Apprenticeship Coordinator, Sheet Metal Workers Local 85 (June 10, 1971)

Roy Norton, Business Manager, Sheet Metal Workers Local 85 (June 10, 1971)

Other Persons Who Provided Information for the Project

George Caudelle, Business Manager, North Georgia Building Trades Council (April 30, 1971)

John Chambliss, Assistant Director, Atlanta Chapter, Associated General Contractors (May 3, 1971)

Charles N. Conner, Regional Director, Bureau of Apprenticeship and Training (May 3, 1971)

Robert A. Ferguson, Director, Atlanta Area Technical School (June 18, 1971)

Harry E. Hicks. Director, Instructional Services Center, Atlanta Public Schools (June 16, 1971)

E. T. Kehrer, AFL-CIO Civil Rights Department (April 30, 1971)

George L. Peterson, Director, Atlanta Chapter, National Electrical Contractors Association (April 30, 1971)

Emory Via, Director, Resources Development Center, Southern Regional Council (May 3, 1971)

John P. Weber, Representative for Atlanta, Bureau of Apprenticeship and Training (May 3, 1971)

Union Officials

Bricklayers

J. R. Wise, Business Agent, Bricklayers Local 8 (June 30, 1971)

Carpenters

G. A. McNeil, Business Agent, Carpenters Local 1266 (June 24, 1971)

Electricians

Max Ladusch, Business Agent, IBEW Local 520 (June 24, 1971)

Ironworkers

D. A. Ragsdale, Financial Secretary-Treasurer and Business Manager, Ironworkers Local 482 (June 24, 1971)

Plumbers and Steamfitters

James A. Hamrick, Incoming Business Agent, Plumbers and Steamfitters Local 286 (June 25, 1971)

Walter Lingo, Outgoing Business Agent, Plumbers and Steamfitters Local 286 (June 25, 1971) (now deceased)

Other Persons Who Provided Information for the Project

Lynn Brown, Administrator, Texas State Board of Plumbing Examiners (March 14, 1972)

William A. Camfield, Field Representative, Bureau of Apprenticeship and Training (April 6, 1971) (now retired)

William H. Fitz, Chief Consultant, Office of the Deputy Associate Commissioner for Occupational Education and Technology, Texas Education Agency (March 23, 1972)

Clayford T. Grimm, Associate Director, Center for Building Research, University of Texas, Austin, Texas (March 24, 1972)

Other Persons (Continued)

Aubrey H. Hitt, Chief Examiner, Texas State Board of Plumbing Examiners (March 14, 1972)

Walter Kerr, Executive Director, Construction Industry Council for Education, Manpower, and Research, Tyler, Texas (March 24, 1972, by telephone)

Richard Pulaski, Engineering Extension Service, Texas A & M University, College Station, Texas (April 20, 1972)

Joseph Tokash, Consultant, Office of the Deputy Associate Commissioner for Occupational Education and Technology, Texas Education Agency (March 23, 1972)

Union Officials

Bricklayers

Patrick J. Canavan, Business Representative, Bricklayers Local 7 (June 15, 1972)

Sam Mandel, Business Representative, Bricklayers Local 8 (June 24, 1972)

Carpenters

Alfred A. Figone, Former Secretary-Treasurer, Carpenters District Council (June 13, 1972)

Clyde Knowles, Research Director, California State Council of Carpenters (June 5, 1972)

Gordon A. Littman, Assistant Director, Northern California Carpenters Apprenticeship and Training Program (June 6, 1972)

Electricians

Karl V. Eggers, Assistant Business Agent, IBEW Local 595 (August 10, 1972)

Franz E. Glen, Business Manager, IBEW Local #6 (June 16, 1972)

S. R. McCann, Business Manager, IBEW Local 302 (November 20, 1972)

T. O. Roberts, International Representative, District Officer (August 7, 1972)

Maurice C. Wagner, Training Director, Alameda County Joint Apprenticeship and Training Committee for the Electrical (Inside Wireman) Trade (May 19, 1972)

W. L. Vinson, International Vice President, IBEW Ninth District (August 7, 1972)

Ironworkers

Arthur F. Ronz, Apprenticeship Coordinator, California State Ironworkers Joint Apprenticeship Committee (August 9, 1972)

Richard Zampa, Business Agent, Ironworkers Union Local 378 (August 16, 1972)

Plumbers and Steamfitters

George A. Hess, Business Manager, Plumbers and Steamfitters Local 444 (July 21, 1972, Oakland)

Joseph P. Mazzola, Business Manager, Plumbers and Steamfitters Local 38 (July 20, 1972, San Francisco)

Dan McCormick, Business Representative, Plumbers and Steamfitters Local 38 (August 18, 1972, San Francisco)

Sheet Metal Workers

Fred W. Harmon, Business Manager, Sheet Metal Workers Local 216 (July 10, 1972, Oakland)

Edward F. Kenny, Business Manager, Sheet Metal Workers Local 104 (July 20, 1972, San Francisco)

Other Persons Who Provided Information for the Project

Norm Amonson, Coordinator, Center for Labor Research and Education Institute of Industrial Relations, University of California (July 13, 1972)

Tom Coughlan, President, Joint Apprenticeship Committee for Bricklayers Local 7 (July 13, 1972)

Gilbert O. Davidson, Area Supervisor, Division of Apprenticeship Standards (June 8, 1972, San Francisco)

Thomas Dee, President, Masons and Builders Association of Northern California (November 16, 1972)

Joe DeLuca, Administrator, Plumbers and Steamfitters Pension and Steamfitters Trust Fund, Local 38 (August 18, 1972, San Francisco)

Gregory W. Govan, Executive Manager, Plumbing-Heating-Cooling Contractors of Alameda County (July 17, 1972)

George A. Harter, Executive Manager, San Francisco Electrical Contractors Association (June 26, 1972, San Francisco)

Robert N. Mounce, Director, Labor Relations, Associated General Contractors (June 5, 1972, San Francisco)

Ralph M. Olig, Director of Data Processing, Carpenters' Trust Fund (June 6, 1962, San Francisco)

Other Persons (Continued)

J. E. Plascjak, Training Director, Drywall Training and Educational Committee of California (July 8, 1972)

James E. Stratten, Division of Apprenticeship Standards, Department of Industrial Relations (February 4, 1973, San Francisco)

George Strauss, Associate Dean, School of Business Administration, University of California at Berkeley (May 7, 1972)

Don Vial, Center for Labor Research and Education, Institute of Industrial Relations, University of California at Berkeley (July 13, 1972)

Union Officials

Bricklayers

George Popovic, Business Manager, Bricklayers Local 21 (July 20, 1972)

Carpenters

Adolph Dardar, Apprenticeship Coordinator, District Council of Carpenters Apprenticeship Program (July 20, 1972)

Daniel E. O'Connell, Jr., Assistant Secretary Treasurer, Carpenters District Council (August 30, 1972)

D. H. Rowcliffe, Jr., Pension Fund Administrator, Carpenters District Council (August 3, 1972)

Electricians

Timothy Bresnahan, Electrical Industry Seniority Administrator, IBEW Local 134 (August 3, 1972)

Edward Pierce, Apprenticeship Coordinator, IBEW Local 134 (July 19, 1972)

Ironworkers

Edward Flood, Apprenticeship Coordinator, Ironworkers Local 1 (July 19, 1972)

William Toomey, Business Agent, President, Ironworkers Local 1 (September 25, 1972)

Plumbers and Pipefitters

Albert Bielke, Apprenticeship Coordinator and President, Pipefitters Local 597 (July 18, 1972)

Stephen J. Lamb, Business Manager, Plumbers Local 130 (July 21, 1972) (now deceased)

Francis McCarten, Business Manager, Pipefitters Local 597 (July 18, 1972)

Sheet Metal Workers

Richard Hejza, Apprenticeship Coordinator, Sheet Metal Workers Local 73 (July 19, 1972)

Edward W. Hussey, Business Manager, Sheet Metal Workers Local 73 (July 19, 1972)

Other Persons Who Provided Information for the Project

Thomas Augustine, Director, Regional Office, Bureau of Apprenticeship and Training (October 16, 1972)

Benjamin Bekoe, Director, Chicago Urban League Apprentice Program (August 22, 1972)

Donald W. Dvorak, Executive Director, Builders Association of Chicago, Inc. (October 9, 1972)

Hugh J. McRae, Executive Secretary, Building Construction Employers Association of Chicago (July 17, 1972)

Thomas J. Nayder, President, Chicago and Cook County Building and Construction Trades Council (July 17, 1972)

Joseph Sullivan, Illinois State Supervisor, Bureau of Apprenticeship and Training (October 16, 1972)

Edward R. Teske, Executive Secretary, Mechanical Contractors Chicago Association (July 18, 1972)

Union Officials

Bricklayers

Dale Carmichael, Business Manager, Bricklayers Local 55 (June 22, 1972)

Sherman R. Smoot, Former President, Masonry Contractors Association of Columbus, Inc. (July 18, 1972)

Carpenters

Benny Friedman, Business Agent, Carpenters Local 200 (June 21, 1972)

Robert L. Prickett, Business Manager, Carpenters Local 200 (June 21, 1972)

Robert Woods, Apprenticeship Coordinator, Carpenters Local 200 (June 21, 1972)

Electricians

Daniel E. Bricker, Business Manager, IBEW Local 683 (June 19, 1972)

Robert N. Burroughs, President, Columbus Electrical Contractors Association (July 25, 1972)

Thomas Burton, Apprenticeship Coordinator, IBEW Local 683 (June 19, 1972)

A. H. Moore, Executive Director, National Electrical Contractors Association (June 20, 1972)

Ironworkers

Cecil E. Bosworth, Financial Secretary-Treasurer, Ironworkers Local 172 (June 23, 1972)

Marlowe S. Hawkins Jr., Executive Secretary, Pension Trust Fund, Ironworkers District Council (July 21, 1972)

Plumbers and Steamfitters

Richard Patterson, Apprenticeship Coordinator, Plumbers and Steamfitters Local 189 (June 27, 1972)

Ernest H. Ware, Executive Director, Mechanical Contractors Association of Central Ohio, Inc. (July 14, 1972)

Sheet Metal Workers

Alvin H. Funk, Executive Vice-President, Sheet Metal Contractors of Central Ohio (July 12, 1972)

J. R. Wiesenberger, Apprenticeship Coordinator and Pension Fund Administrator, Sheet Metal Workers Local 98 (June 27, 1972)

Other Persons Who Provided Information for the Project

William J. Aner, Administrative Assistant, Associated General Contractors, Central Ohio Division (July 7, 1972)

Henderson L. Grigley, Director, Columbus Urban League (July 11, 1972)

Samuel J. Hebdo, Executive Director, Associated Builders and Contractors, Inc. (June 20, 1972)

Ralph Hockman, AFL-CIO Representative, Former Secretary, Building Trades Council (June 19, 1972)

Daniel T. McCarthy, Ohio State Supervisor, Bureau of Apprenticeship and Training (June 20, 1972)

Union Officials

Bricklayers

H. A. Brown, Business Agent, Bricklayers Local 7 (April 20, 1972)

Jack Stubbs, Apprenticeship Director, Bricklayers Local 7 (June 6, 1972)

Carpenters

Bert Gresham, Assistant Executive Secretary, Carpenters District Council (April 18, 1972)

George Stein, Director of Training and Education, Carpenters Joint Committee (April 18, 1972)

Electricians

A. R. Brewton, International Representative, IBEW 7th District (May 15, 1972)

Ed Leonard, Training Director, IBEW Local 716 (May 15, 1972)

Roy T. Noack, Business Manager, IBEW Local 716 (May 15, 1972)

Ironworkers

Dewey L. Upshaw, Business Agent, Ironworkers Local 84 (May 19, 1972)

Plumbers and Pipefitters

Ray L. Dailey, Business Manager, Pipefitters Local 211 (April 19, 1972)

Bill Pickens, Business Manager, Plumbers Local 68 (April 5, 1972)

Dave Runnells, Apprenticeship Director, Pipefitters Local 211 (May 25, 1972)

Sheet Metal Workers

Steve Bugaj, Business Agent, Sheet Metal Workers Local 54 (April 17, 1972)

Dean Cooper, Business Agent, Sheet Metal Workers Local 54 (April 17, 1972)

Jules Freund, Director, Sheet Metal Workers Local 54, Joint Apprenticeship Committee (June 5, 1972)

Albert E. Hyde, Executive Director, Houston Sheet Metal Contractors Association (May 25, 1972)

Louis Krzesiencki, Business Manager, Sheet Metal Workers Local 54 (June 5, 1972)

Other Persons Who Provided Information for the Project

Gerald R. Brown, Executive Secretary, Texas State Building and Construction Trades Council, Austin, Texas (June 25, 1970)

Thomas Clarke, Executive Secretary, Mechanical Contractors Association of Houston, Inc. (April 19, 1972) (now deceased)

John Donnelly, Former Area Director, Economic and Manpower Corporation (June 6, 1972)

Roy R. Evans, former President, Texas AFL-CIO (March 15, 1972)

Carrol S. Foren, Texas State Supervisor, Bureau of Apprenticeship and Training, Austin, Texas (February 16, 1971)

M. A. Graham, Executive Director, Houston Gulf Coast Building and Construction Trades Council, AFL-CIO (April 20, 1972)

Claude Gray, Jr., Field Representative, Bureau of Apprenticeship and Training, U.S. Department of Labor (April 20, 1972)

Hartsell Gray, Consultant, Texas AFL-CIO (April 17, 1972)

C. Logan Jobe, Executive Director, Texas Chapter, Associated Builders and Contractors, Inc. (May 25, 1972)

Robert Lopez, Executive Director, Mexican American Contractors Association (May 24, 1972)

French Moreland, Instructor, Apprenticeship Opportunity Program (June 5, 1972)

Francis O'Bryan, Business Agent, Houston Gulf Coast Building and Construction Trades Council, AFL-CIO (April 20, 1972)

Other Persons (Continued)

Robert L. Prater, Dean, School of Technology, Texas Southern University (May 25, 1972)

Jerry Ryan, Director, Apprenticeship Opportunity Program (April 20, 1972)

Barbara Settle, EEOC (May 24, 1972)

A. C. Shirley, Executive Secretary-Treasurer, Texas State Council of Carpenters (April 25, 1972)

George Sumrow, Chapter Manager, Southeast Texas Chapter, National Electrical Contractors Association (April 19, 1972)

Joseph J. Tapal, Director of Vocational and Industrial Education, Houston Independent School District (June 7, 1972)

B. A. Turner, Coordinator, Minority Manpower Resources Project, Texas Southern University (May 24, 1972)

L. S. Webster, Director, Model Cities Pre-employment Training Program for the Building Trades (May 29, 1972)

Linus Wright, Chief Financial Officer, Houston Independent School District (June 7, 1972)

Union Officials

Bricklayers

Ted Lee, Business Agent, Bricklayers Local 15
(June 29, 1972)

Carpenters

W. H. Wood, Business Manager, Carpenters Local 1471
(June 30, 1972)

Electricians

C. L. Tucker, Business Agent, IBEW Local 480
(June 27, 1972)

Ironworkers

G. W. Tyson, Business Agent, Ironworkers Local 469
(June 28, 1972)

Plumbers and Steamfitters

Harry Rosenthal, Business Agent, Plumbers and Steamfitters Local 681 (June 29, 1972)

Sheet Metal Workers

Grayson Moore, Business Agent, Sheet Metal Workers Local 406 (June 29, 1972)

Other Persons Who Provided Information for the Project

Claude Ramsay, President, Mississippi AFL-CIO
(June 27, 1972)

Union Officials

Bricklayers

Andrew Lawlor, Executive Secretary, Bricklayers Executive Committee (August 17, 1971)

Carpenters

Edward A. Bjork, Secretary-Treasurer, Carpenters District Council (July 29, 1971)

Charles P. Fanning, Apprenticeship Director, Carpenters District Council (July 27, 1971)

Jack Gelman, Second Vice-President, Carpenters District Council (November 17, 1971)

Electricians

Harry Van Arsdale, Jr., Financial Secretary and Former President and Business Manager, IBEW Local 3 (August 27, 1971)

Ironworkers

Gerard Place, President, Ironworkers Local 40 (October 15, 1971)

Paul Rockhold, Business Manager, Ironworkers Local 361 (August 24, 1971)

Matt A. Steinberg, Apprenticeship Coordinator for Ironworkers Locals 40 and 361 (August 27, 1971)

Plumbers and Steamfitters

Sam Brodsky, Secretary-Treasurer, Plumbers Local 1 (August 23, 1971)

James A. Mulligan, Secretary-Treasurer, Steamfitters Local 638 (November 18, 1971)

Gene Murray, Director, Plumbing Joint Industry Board (October 12, 1971)

Plumbers (Continued)

Henry Murray, Assistant Secretary-Treasurer, Plumbers Local 2 (October 7, 1971)

George Whalen, President, Association of Contracting Plumbers, Brooklyn and Queens (August 20, 1971)

Sheet Metal Workers

Mell Farrell, President, Sheet Metal Workers Local 28 (July 18, 1971)

Edward J. O'Reilly, Secretary, Joint Apprenticeship Committee, Sheet Metal Workers Local 28 (July 18, 1971)

Other Persons Who Provided Information for the Project

Eddie Johnson, Director, Joint Apprenticeship Program, Workers Defense League (July 26, 1971)

Thomas L. McQuade, Area Representative, Bureau of Apprenticeship and Training (July 26, 1971)

Frank Neher, Regional Director, Bureau of Apprenticeship and Training (July 26, 1971)

Donald F. Rodgers, Executive Director, New York Building and Construction Industry Board of Urban Affairs (July 28, 1971)

Electricians

Buck Baker, Director, National Joint Apprenticeship Training Committee for the Electrical Industry, Washington, D.C. (May 18, 1972)

Marcus L. Loftis, International Brotherhood of Electrical Workers, Washington, D.C. (May 6, 1971)

Others

Donald Slaiman, Director, AFL-CIO Civil Rights Department, Washington, D.C. (May 6, 1971)

APPENDIX B

Guide for Journeyman Interviews

City _____

Trade _____ Local Union No. _____

Interviewed by _____

Date _____

Personal Interview _____ or Phone Interview _____

I. TYPE OF WORK PREFERRED

1. What type of card or book do you hold?
   Does it restrict you to a certain type of task, or can you be referred to any type of work?

   Is there a card which permits the holder to do all types of work in this local? Yes _____ No _____

2. What sector do you work in (shop, on site, residential, commercial/industrial, heavy/highway)?

3. Do you prefer a certain kind of work? Yes _____
   No _____
   Why?
   Do you do primarily one type of work--a specialty-- or do you do all kinds?
   Is there any kind of work that you dislike?
   Yes _____ No _____

4. Do you have a license?
   What kind?
   Who issues it (city, county, state)?
   Is anyone in the industry required to have a license?
   Yes _____ No _____
   Who?
   What type?

5. Do you work as a foreman or superintendent?
   About how much of the time (all, half or more, less than half, very little, never)?

6. When did you first work as a supervisor (year)? _____

7. Do you work full time at the trade, or do you work outside the trade as well (including moonlighting as a contractor on your own)?

When?
What kind of work?

II. TRADE BACKGROUND

1. When did you first work at the trade (year)?
Number of years worked
When did you first join the union (year)?
When did you become a journeyman (year)?

2. What sort of training did you have before you joined union?

Type of Training	Opinion of This Type of Training
a. Laborer or helper	_____
b. Open shop (OJT)	_____
c. Public vocational education	_____
d. Private vocational education	_____
e. Military	_____
f. Other industry	_____
g. Government programs	_____
h. Other	_____

3. Have you had any further training since you joined the union? Yes _____ No _____

If so, what kind?

a. Nonunion training Yes _____ No _____

b. Union journeyman upgrading programs Yes _____ No _____

Evaluation of journeyman training?

4. Did you serve in an apprenticeship program?
In this local? Yes _____ No (where) _____
Did it include related classroom training?
Yes _____ No _____
How long was the program (years)?
Were you given credit for prior experience?
Yes (how much) _____ No _____
Did you finish the program? Yes _____ No _____
If not, why not?

How would you evaluate the training you received in apprenticeship?

5. Entry requirements

a. If apprenticeship-trained: what sort of things did you do in order to get into the apprenticeship program?

Age requirement (years) Minimum: ___ Maximum: ___

Education requirement (years) _____

Years experience required _____

Did they give you a test (written, oral, or practical? over the trade or aptitude? over the whole trade or just your specialty?)?

Interview

Vouchers required (number) _____ By Whom?

Majority vote of membership

Probationary period (how long) _____

Fee(s) $_____

What did you have to do in order to become a journeyman at the end of your apprenticeship?

Final exam or other test? (written, oral, or practical? over the trade or aptitude? over whole trade or just your specialty?)

Vouchers required (number) _____ By Whom?

Majority vote of membership

Fee(s) $_____

5. b. If not apprenticeship-trained: what sort of things did you do in order to become a journeyman?

Age requirement (years) Minimum: ___ Maximum: ___

Education requirement (years) _____

Years experience requirement _____

Did they give you a test (written, oral, or practical? over the trade or aptitude? over the whole trade or just your specialty?)?

Interview

Vouchers required (number) _____

Majority vote of membership

Probationary period (how long)

Fee(s) $_____

c. How are the standards different now, if at all?

6. Did you ever work on permit or traveler's card (note which) before you joined the local?
Yes _____ No _____
What kind of work did you do on permit?

III. INDIVIDUAL'S BACKGROUND

1. Age

2. Race (interview identifies)

3. How far did you go in school (grade or GED)?

4. Did you ever go to college (years)_____
What was your major field?

5. What got you interested in this trade?
Did your father work in this trade?
Was (is) he a union member?
Did you have friends or relatives in the union before you joined (other than father)?

6. Have you had any illnesses or accidents during the period 1967-1971 that have affected the number of hours you worked (and your pension fund contributions during that time)? Yes _____ No _____
If so, when?

7. Have you ever taken out a traveler's card to work in another local? Yes _____ No _____
If so, when?

8. Did you ever belong to another local?
Yes (if so, when) _____ No _____

9. Have there been any bad times for the trade in your area since 1965?
Yes (if so, when) _____ No _____

10. Approximately how many contractors have you worked for since 1965?

11. Have you ever worked for a relative?
Yes _____ No _____

IV. POSSIBLE REFERRALS

1. Do you know anyone working on permit?

APPENDIX C

INTERVIEW FORM FOR UNION BUSINESS AGENTS

How long have you been in the trade?

Held present office?

Nonapprentice entrants:

What percentage of local membership came into the union without serving apprenticeship?

What percentage come in through nonapprenticeship routes now?

Any records showing year-by-year breakdown of apprentice-nonapprentice entrants?

Average age of nonapprentice entrants?

Source of training?

Years experience before joining?

Admission requirements:

Age limits:

Education:

Is there a test?

Same as apprentice final?

Written, oral, practical?

Over the trade or aptitude?

Who makes it out, administers, grades it?

Minimum score?

Validated?

Results available?

When was testing first used?

Years experience in the trade?

Is there an interview?

By whom?

Makeup of committee?

Appointed or elected?

How much latitude do these men have in determining who meets union standards?

Must the man be sponsored?

Voted on by membership?

Any probationary period?

Must he have a job first, or do most rely on being referred to work?

How long have these standards been used?

Any recent changes?

Permit System

Who may work on permit?

Do members of other locals get permits automatically?

At whose discretion?

What is the fee?

Is there a test?

What form does it take?

Is there any limit to the length of time a man may work on permit?

Can permit people do all types of journeyman work, or only certain types?

Does it vary with tightness of market?

How long has this system been in effect?

How was it different in the past?

Transfers from other locals:

Is transfer automatic?

Is there a difference in membership fees?

If so, must the transfer make up the difference in membership fees?

Any probationary period?

Is there a test?

If so, of what form?

Apprenticeship entrance requirements:

Age range:

Education:

Test?

Interview:

by JAC?

Sponsorship?

Fees?

Apprenticeship program:

Length?

Provision for experience?

Tests at intervals?

Final exam?

What form?

How compared to test requirements of nonapprentice applicants?

Journeyman training programs:

Are there any?

What subjects?

Who takes such training?

Types of Journeyman classification:

What types exist?

Do the rates vary?

Are some types easier to get in without apprenticeship?

Which ones?

Do many nonapprentices enter as specialists?

What degree of transferability exists among classifications?

What is the procedure for working outside one's classification (if it is possible to do so at all)?

APPENDIX D

Questionnaire Form Used in Sheet Metal Workers Local 85 Survey of Supervisory Experience

SAMPLE

SHEET METAL WORKERS LOCAL #85
1838 STEWART AVE. S. W.
ATLANTA, GEORGIA 30315

NAME _____ DATE ENTERING TRADE _____

APPRENTICESHIP SCHOOL ATTENDED _____

DATES ATTENDED: FROM _____ TO _____

OTHER SCHOOLS ATTENDED SUCH AS WELDING, DRAFTING, I.C.S., & ETC.

_____

_____

_____

POSITION WITH PRESENT EMPLOYER:

JOURNEYMAN _____ FOREMAN _____ SUPERINTENDENT _____

OTHER _____

POSITION IN SUPERVISORY CAPACITY HELD WITH OTHER EMPLOYERS:

_____ FROM _____ TO _____

_____ FROM _____ TO _____

_____ FROM _____ TO _____

_____ FROM _____ TO _____

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WHERE TO GET MORE INFORMATION

For more information on this and other programs of research and development funded by the Manpower Administration, contact the Manpower Administration, U.S. Department of Labor, Washington, D.C. 20213, or any of the Assistant Regional Directors for Manpower whose addresses are listed below.

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